

RTC Ex. 1

In re The Commonwealth of Puerto Rico, et al, 17-3283-LTS (D. P.R.)

Testimony of Simon Johnson

September 13, 2021

1. Introduction

- 1.1 On behalf of the Official Committee of Retired Employees of the Commonwealth of Puerto Rico (the “**Retiree Committee**”), through its counsel Jenner & Block LLP (“**Jenner & Block**”), I have been retained to serve as an expert consultant in connection with the above-referenced Title III case and all related Title III cases and adversary proceedings.
- 1.2 Specifically, I have been asked to opine on: (i) the economic impact of the proposed adjustment in pensions, which has been agreed to by the Financial Oversight and Management Board for Puerto Rico (“**FOMB**”) and the Retiree Committee as per the Seventh Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., dated July 30, 2021; and (ii) the potential impact of any additional cuts to pensions, beyond the level proposed.
- 1.3 To conduct this analysis, I have considered the direct effects on pensioners and current government employees, and what downward adjustment in their future incomes implies for the broader economy in Puerto Rico, including potential effects on spending, migration, and healthcare. I have also assessed the broader macroeconomic consequences for economic growth, fiscal sustainability, and the ability of the Commonwealth to pay its restructured debts going forward.
- 1.4 My professional background and experience are in macroeconomics, as well as in private-sector development and economic growth across countries at all income levels. I have extensive expertise in financial, economic, and public crises, including how best to facilitate economic recovery and what can prevent a sustainable recovery from taking place.
- 1.5 Over the past 35 years, I have worked on these issues in the former Soviet Union, Eastern Europe, East Asia, sub-Saharan Africa, and Latin America. I was the Economic Counsellor (chief economist), head of the research department, and one of the two most senior staff officials at the International Monetary Fund in 2007-08. Subsequently, I was a member of the Center for a New Economy’s Growth Commission on Puerto Rico from 2017 to June 2019, which involved discussions about recent economic history and policy options for Puerto Rico. I was also: a member of the Financial Research Advisory Committee in the U.S. Department of the Treasury’s Office of Financial Research from 2014 to December 2016, where I chaired the Global Vulnerabilities Working Group; a member of the Federal Deposit Insurance Corporation’s Systemic Resolution Advisory Committee from its creation in 2011 to December 2016; a member of the Congressional Budget Office’s Panel of Economic Advisers from 2009 to 2015; and a senior fellow at the Peterson Institute for International Economics from September 2008 to November 2019.
- 1.6 Since 1997, I have been a professor at MIT’s Sloan School of Management, where I am currently the Ronald A. Kurtz Professor of Entrepreneurship and head of the Global Economics and Management group. At MIT, I teach courses on international economics, global entrepreneurship, and the economics of worldwide new technology deployment.

- 1.7 I am also currently a research associate for the National Bureau of Economic Research, a private nonpartisan organization that facilitates cutting-edge investigation and analysis of major economic issues. I am a member of the Systemic Risk Council, a public interest group that monitors progress on the implementation of financial reforms.
- 1.8 In November 2020 - January 2021, I was a member of the Biden-Harris transition team, working on economics, finance, and public health. In February 2021, I joined the board of directors of the Federal National Mortgage Association ("**Fannie Mae**"), a publicly traded company that provides housing finance.
- 1.9 My full biography and professional resume are attached to this testimony as Appendix 1.
- 1.10 On February 2, 2016, I testified to the Committee on Natural Resources, Subcommittee on Indian, Insular and Alaska Native Affairs, oversight hearing on, "The Need for the Establishment of a Puerto Rico Financial Stability and Economic Growth Authority." On April 13, 2016, I testified to the full Committee on Natural Resources, legislative hearing on a discussion draft of the Puerto Rico Oversight, Management, and Economic Stability Act ("**PROMESA**"). In both of those congressional testimonies, I supported the proposed PROMESA legislation.
- 1.11 In preparing the current expert testimony, I conducted extensive research into the historical and current economic situation in Puerto Rico, with a particular focus on pensions, debt, and the various proposals being put forward by the FOMB. From July 2019, I was assisted in this work by FTI Consulting, which provided a team of researchers to assist in fact-checking, documentation, data analysis, and the preparation of figures and tables. This team worked under my close direction for more than two years, and all of this testimony was drafted and edited by me. I am solely responsible for its content. My hourly rate is \$700 for the purposes of this engagement, plus reimbursable expenses.
- 1.12 We made extensive use of publicly available data, including the most recent reliable information from the government of Puerto Rico, the federal government, and various other sources.
- 1.13 I understand that this report may be made publicly available. It has been prepared solely for use in this matter. No liability is accepted to any person other than the Retiree Committee except insofar as any liability arises to the Court from the giving of evidence. I confirm my independence from the parties and their legal advisers.
- 1.14 I have relied on publicly available documents and documents provided to me by Jenner & Block. Where these documents have not previously been exhibited in these proceedings, I exhibit them with this report. I provide a list of these exhibits in Appendix 2.

1.15 Key information that I have relied on includes:

- (1) the FOMB's Fiscal Plans and associated Excel spreadsheets;
- (2) Ernst & Young's ("EY") report on the Puerto Rico Retirement Systems dated September 2019;
- (3) summary statistics on Puerto Rico's pensioners provided by Segal, an actuarial consulting firm retained by the Retiree Committee;
- (4) population statistics from the U.S. Census Bureau website;
- (5) economic and population statistics from the World Bank website; and
- (6) other publicly available resources and databases as identified in this report and the appendices thereto.

1.16 I reserve the right to reconsider my conclusions should further information be made available to me. My opinions are limited to matters that fall within my expertise as an economist and exclude questions of law.

2. Executive summary

- 2.1 This testimony is divided into five parts.
- 2.2 First, I review the economic context that has put pension cuts on the table again for Puerto Rico. This is the result of a series of shocks, which have put great pressure on a weak economic system over the past two decades. I particularly emphasize that whenever economic difficulties mount, migration out of Puerto Rico tends to increase, which tends to further shrink the economy on the island, undermine the tax base, and make it harder for the government to service its debts.
- 2.3 Second, I summarize the proposed pension adjustment and its likely direct impact on the incomes, living standards, and health of pensioners. Most of the pensioners already live on very low incomes (in 2016, 52% of affected retirees had pension benefits below \$12,000 per annum), and the proposed adjustment would push more of them down towards the federal poverty level (currently around \$13,000 per annum for a single person household).
- 2.4 To put the potential consequences of this proposed adjustment in context, I assess how close people are already to poverty in Puerto Rico (in 2019, Puerto Rico's poverty rate was 44%, more than double that of Mississippi's, the second highest rate). I also highlight the frail nature of the social safety net in Puerto Rico – meaning that other programs, including state supported healthcare, are already very weak both in absolute terms and relative to any of the 50 states (for example, Puerto Ricans have access to less than half the number of emergency physicians and registered nurses per person compared with residents of the 50 states). Many pensions have already been cut significantly pre-PROMESA, and the reductions now on the table will push more people down towards the poverty level.
- 2.5 Due to the informal nature of housing on the island (estimates suggest that up to 55% of houses may not have a clearly established legal title establishing ownership), if people face financial distress, they cannot refinance their mortgages or otherwise borrow to access the value of accumulated equity in their homes. This reduces the private resources available to protect living standards in the face of adverse shocks, such as hurricanes, pandemics, or financial crisis – all of which have hit the island hard in the past 13 years.

- 2.6 As people are pushed towards or even below the poverty line in Puerto Rico, their physical and mental health will come under further pressure, and their ability to survive is at greater risk (as of 2019, more than 40% of the population received food stamps).¹ Increasing numbers of both pensioners and people currently working are likely to leave the island. The process of out-migration from Puerto Rico is long established, but it has accelerated dramatically after two very difficult decades and particularly since the economic crisis deepened over the past half dozen years. More than 125,000 people left the island in 2018 alone, after two major hurricanes, and net out-migration continued at around 50,000 in 2019. Lower pensions will accelerate departures, further undermining the local tax base and making it harder for Puerto Rico to pay for essential services such as law and order, health, and education.
- 2.7 Undermining social infrastructure in this way will reduce Puerto Rico's ability to service its restructured debts. This is particularly concerning considering potential future shocks, such as severe weather events, earthquakes, or other natural disasters.
- 2.8 Third, I assess the potential macroeconomic consequences of the proposed cuts, focusing on the likely effects on local demand (i.e., on the island), employment, and tax revenue. Puerto Rico's macroeconomic situation has long been fragile, with obvious vulnerability to financial, weather, and public health shocks. Real Gross National Product, which measures overall economic activity, has fallen by around 25% since 2007. The proposed pension cuts will have a depressive effect on island-wide economic performance, with obvious negative consequences for public finances, including the government's ability to make debt payments. I estimate that the proposed pension cuts of up to 8.5% with a \$1,500 threshold will result in a 0.2% contraction in GNP and a decline in employment of around 1,600 jobs.² This is an estimate of the direct effect, which excludes the effect of out-migration, the possibility of which is explained in more detail later in this report.
- 2.9 Other proposals could have even worse effects. For example, the original FOMB proposal, which involved cuts of 25% in pensions more than \$600 (for non-police ERS members) or \$1000 (for all other groups) of received monthly benefits, would reduce GNP by 0.7% and cut employment by more than 6,300.³ Table 1 below sets out the estimated impact of pension cuts on estimated savings, GNP, and employment of Puerto Rico for different scenarios of cuts and fiscal multipliers (excluding the effects of out-migration). As I explain in Section 5, it is plausible that Puerto Rico's economy has a higher fiscal multiplier than the value of 1.34 assumed by FOMB's Fiscal Plan, and this multiplier could be even larger for scenarios with deeper pension cuts. I therefore set out the effects of pension cuts for alternative values of the fiscal multiplier.

¹ See Figure 4.

² See Section 5.

³ See Section 5 for detailed calculations.

Table 1: Summary estimated impact of pension cuts on Puerto Rico's economy

Pension cut	Fiscal multiplier	Savings in FY2023	Contraction in GNP (effect in first year)	Lost jobs (in first year)
8.5% cut and \$1,500 threshold	1.34	\$90m	0.20%	1,600
25% cut above \$600/\$1000	2	\$236m	0.60%	6,300
Cut all pensions to \$1,000	3	\$772m	3.20%	31,000

Note: The 25% cut would apply to pensions above \$600 for non-police ERS members and pensions above \$1,000 for all other groups. I base my estimates on Puerto Rico's projected FY 2023 GNP of \$71.2 billion (as per 2021 Fiscal Plan, FOMB, April 23, 2021) and total employment on the island of 980,000 as at June 2021. For details, see Section 5 and Appendix 13.

Source: Appendix 13.

- 2.10 Any additional pension cuts, beyond those proposed, could have much larger – and hard to reverse – negative macroeconomic consequences because of potential nonlinear effects. In this context, a nonlinear effect would mean that a specific dollar amount of pension cuts has a larger impact on macroeconomic outcomes when pensions are already at a lower level. The most obvious source of potential nonlinearity is through out-migration.
- 2.11 It is very easy for residents of Puerto Rico to move to the 50 states. Anyone born in Puerto Rico is a U.S. citizen, and there are already strong Puerto Rico-origin communities in states such as Florida, Texas, and New York. As the job markets in those states have been consistently stronger than in Puerto Rico, working age people are particularly inclined to move. However, families also show a strong disposition to bring dependents with them, including children and grandparents. When there is already a vibrant Puerto Rican community in places on the mainland, this can make it more attractive to move there, including for older people. Therefore, the more people who migrate, the more inclined other people become to migration. In addition, as more people leave the island, the local economy and its prospects will decline further, which reduces the economic motivation to stay on the island.
- 2.12 This effect is compounded by what has happened to the healthcare system in Puerto Rico. Because of the way that healthcare is financed, the hospital and primary care system on the island is less well-funded and more fragile than in any of the 50 states. As more people leave the island, both local and federal sources of funding for healthcare decline. Older people are naturally concerned about access to doctors and all forms of supportive care. By undermining the healthcare system, out-migration increases the incentive for others to leave the island.

- 2.13 Further pension cuts are likely to undermine state capacity, by making it harder to hire new public sector employees – as they will regard future pension commitments as more uncertain and therefore as worth less. Weaker state capacity means greater problems with crime and public safety, as well as more difficulties delivering healthcare on the island. All of these problems have the potential to further accelerate the rate of net out-migration, including both younger and older people. There is no obvious lower limit to the number of people who will remain in Puerto Rico as permanent residents and taxpayers.
- 2.14 If pensions are cut further, a continued downward spiral in the demographics of Puerto Rico is likely, along the lines of what has been experienced over decades in some big U.S. cities, such as Detroit, Pittsburgh, Cleveland, and St. Louis. In some of those cities, the population declined to between one-third and one-half of its peak.
- 2.15 Historically, there are plenty of cases in which even quite large cities or states experience a fall in population by 95% or more. This is unusual in the modern U.S., but primarily because there are strong social and private safety nets in place. However, because Puerto Rico lacks such safety nets and already has a relatively low fertility rate along with an ageing population, we cannot rule out the possibility that the island could become hollowed out. The birth rate has fallen to around a third of its previous level since 1990, and the share of the population aged 65 and older has doubled since 2000. A full ghost town scenario is not likely, but a substantial further economic decline over decades is entirely feasible.
- 2.16 Fourth, I discuss what would be the effect of cutting pensions further on Puerto Rico's future access to credit markets. Access to future credit matters but forcing further cuts onto pensioners would be self-defeating even in this narrow regard because of the likely negative effects on the economy and social stability. Further pension cuts will undermine social infrastructure (e.g., law and order, health, and education) which will tend to increase migration and could easily reduce social stability. Any move in this direction would increase political risk. As financial markets are forward looking, such developments would be likely to boost the risk premium on new debt. If social infrastructure deteriorates even more, this could even jeopardize access to credit markets, i.e., there may be no reasonable rate of interest at which Puerto Rico can borrow, or other terms and conditions may be so onerous that going to the public debt markets becomes politically untenable. Losing access to credit in the future would have a definite negative impact both on future prospects on the island and on its ability to continue servicing its restructured debts.
- 2.17 Fifth, separately and together, the above points support the view that it is reasonable to treat pensioners differently from bondholders. Spending by pensioners is a significant component of local demand in Puerto Rico. The annual income of government retirees constitutes about 7% of household consumption on the island. Cutting pensions will lead to more out-migration, both directly as people seek higher incomes elsewhere (or move to live with family members, because they can no longer survive on their own on the island) and because the healthcare system will decline further as its federal funding is tied to the number of people on the island. A decline in access to healthcare will further encourage other families to leave the island.

- 2.18 As population falls, there will be a decline in the revenue base that supports health, education, and public safety. A long-term downward spiral, as experienced in some U.S. cities since 1950, is entirely feasible. Reducing pensions down to and below the poverty level makes this downward spiral more likely. The worst-case scenario is that Puerto Rico displays some of the dynamics seen in long-term urban decline scenarios, in which only low-income and completely immobile people are left behind.
- 2.19 If bondholders were paid ahead of pensioners and other critical government spending, social infrastructure - health, education, and public safety - would decline quickly. The political backlash would likely be severe, leading to instability and, paradoxically, an unwillingness or inability on the part of the government to live up to such commitments to bondholders. This would be an unusual scenario for part of the U.S., but entirely consistent with experience in other parts of the world.
- 2.20 In addition to the above considerations, Puerto Rico's adjustment process started well before PROMESA and actually led with cuts to pensions - even while bondholders continued to receive interest and principal payments. Consequently, many pensioners have already experienced large cuts in their actual and expected monthly payments in real (inflation-adjusted) terms.
- 2.21 As current and potential government employees look at how pensioners have been treated already, this will discourage qualified people from entering government service. Limiting the likely supply of highly competent officials undermines the ability of the government to provide critical services, including in support of social infrastructure.

My opinions

- 2.22 In light of the foregoing, I have reached the following opinions:
- (1) Any cut to the pensions of government employees would have a negative impact on the Puerto Rican economy.
 - (2) The proposed cuts of up to 8.5% above the threshold of \$1,500 per month are less damaging than the cuts originally put forward by the FOMB.
 - (3) Any cuts that are deeper than the proposed cuts could significantly worsen the risks facing the economy over the medium term.
 - (4) Cutting pensions further could destabilize economic prospects and jeopardize Puerto Rico's future access to credit markets.
 - (5) The Plan of Adjustment's proposed treatment of pensioners relative to bondholders is justified based on current and likely future economic circumstances.

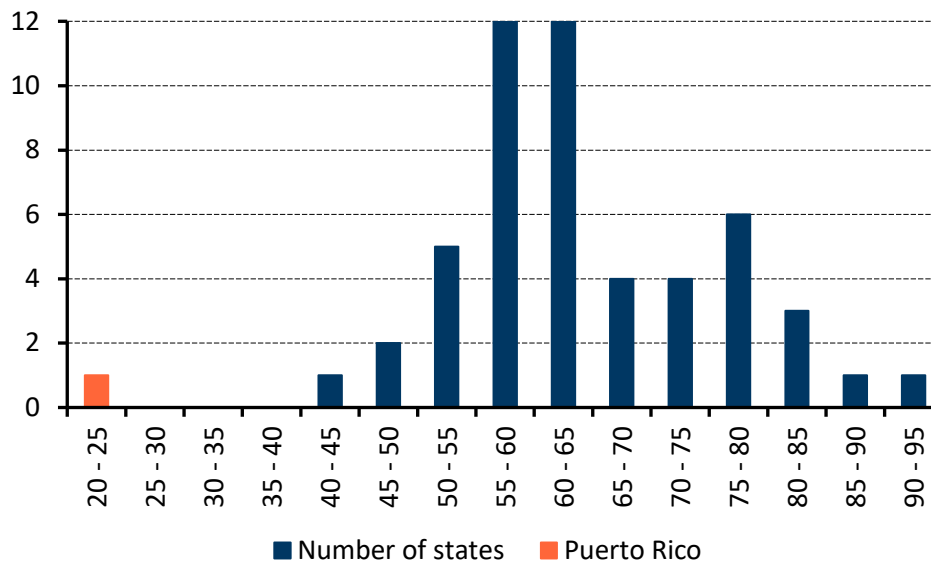
2.23 The main body of my testimony is complemented by further details provided in twelve appendices. The order of this material is:

- (1) Full biography and professional resume;
- (2) Sources relied upon;
- (3) Key events in Puerto Rico history;
- (4) Overview of Puerto Rico's recent economic history;
- (5) Historical and proposed pension cuts;
- (6) Comparison of pensions in Puerto Rico and the 50 states;
- (7) Social Security impact on retirees' incomes;
- (8) Cost of living in Puerto Rico;
- (9) More details on the fiscal multiplier;
- (10) Causes of out-migration from Puerto Rico and comparable U.S. geographies;
- (11) Healthcare funding in Puerto Rico;
- (12) Healthcare provision in Puerto Rico; and
- (13) Figures and tables.

3. Economic Context

- 3.1 Puerto Rico is an island in the north-eastern Caribbean that was part of the Spanish empire from 1493-1898. The U.S. took control as a consequence of the Spanish-American war and, under the 1917 Jones Act, Puerto Rico became an “organized but unincorporated” U.S. territory. People born on the island are full U.S. citizens, but residents of Puerto Rico cannot vote in presidential elections. There is one representative of Puerto Rico in Congress, but this person can only vote in a House committee.
- 3.2 In terms of land area, Puerto Rico is about the same size as Connecticut, the third smallest state.⁴ The economy of Puerto Rico is dominated by one large metropolitan area, San Juan-Bayamón-Caguas which has a population of around two thirds of the island’s population.⁵ Puerto Rico has long been characterized by low per capita income relative to even the poorest of the 50 states (Figure 1). As Figure 1 shows, Puerto Rico has a median household income between \$20,000 and \$25,000, while the poorest of the 50 states, Mississippi, has a median household income between \$40,000 and \$45,000.

Figure 1: Number of states in median household income brackets, 2019 (2018 \$ thousands)



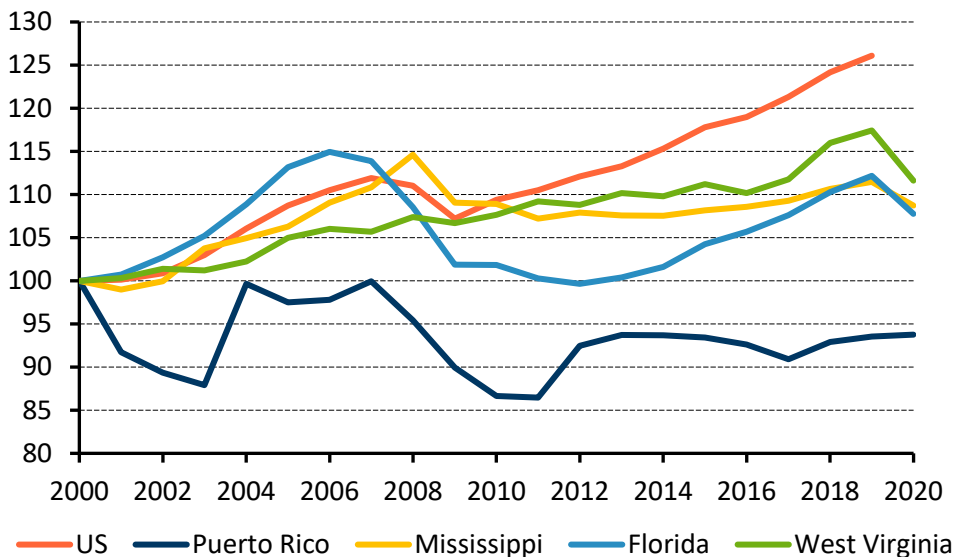
Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

⁴ State area measurements, U.S. Census Bureau website, accessed August 13, 2021 [\[link\]](#).

⁵ $2,081,265 \div 3,285,874 = 60.6\%$. Nevada and Idaho Are the Nation’s Fastest-Growing States, U.S. Census Bureau, December 19, 2018 [\[link\]](#); 2020 Population and Housing State Data, U.S. Census Bureau website, accessed September 2, 2021 [\[link\]](#)). I note that the exact definition of the broader San Juan metropolitan area differs slightly between sources.

- 3.3 In recent decades, real per capita incomes have grown more slowly on the island than in the 50 states, and this gap has been exacerbated by the economic crises and natural disasters of the past 13 years. Even relatively poor states (such as Mississippi), states most affected by the housing-financial crisis of 2008 (such as Florida), and states that face longer-term economic problems (such as West Virginia) have managed higher per capita growth rates than Puerto Rico this century. Unlike any of the 50 states and the U.S. as a whole, Puerto Rico now has lower per capita income than it did two decades ago (Figure 2).

Figure 2: Comparison of real per capita incomes in the U.S., Puerto Rico, and selected U.S. states, 2000 to 2020 (indexed, 2000 = 100)

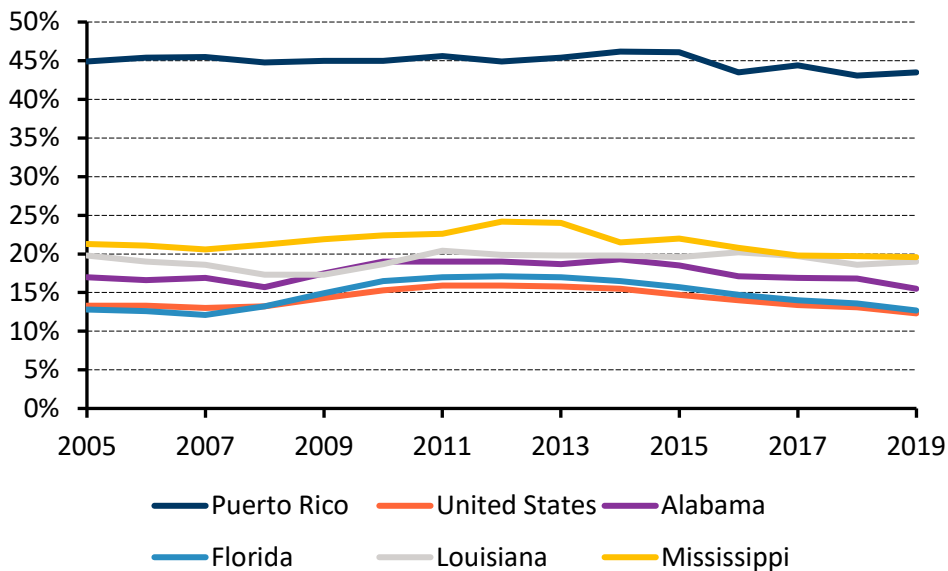


Note: For the U.S. and Puerto Rico, I obtained World Bank's data for Real Gross National Income (GNI) in 2010 prices, the Gross Domestic Product (GDP) deflator for U.S. and Puerto Rico, and population numbers. I then used these data to calculate Real GNI per capita in 2018 prices for the U.S. and Puerto Rico as reflected in Figure 2. For individual states, I obtained Real GDP in 2012 prices for each state from the U.S. Bureau of Economic Analysis, and I obtained states' population numbers from the U.S. Census Bureau. I then calculated Real GDP per capita in 2012 prices and converted it to 2018 prices using the World Bank's GDP deflator for the U.S. I further note that World Bank defines GNI to be the same as GNP [\[link\]](#).

Sources: U.S. Census Bureau; World Bank; U.S. Bureau of Economic Analysis. See Appendix 13 for additional details.

- 3.4 This lower level of per capita incomes is reflected in much higher poverty levels in Puerto Rico compared with other parts of the U.S. (Figure 3). Mississippi and Louisiana typically have 20% to 25% of their populations living in poverty. In Puerto Rico, the poverty rate is roughly twice that level. Should a resident of Puerto Rico move to Florida, for example, they would be arriving in a place that has, on average, a poverty rate of around one-quarter the Puerto Rico level.

Figure 3: Poverty rate by state, 2005 to 2019 (%)

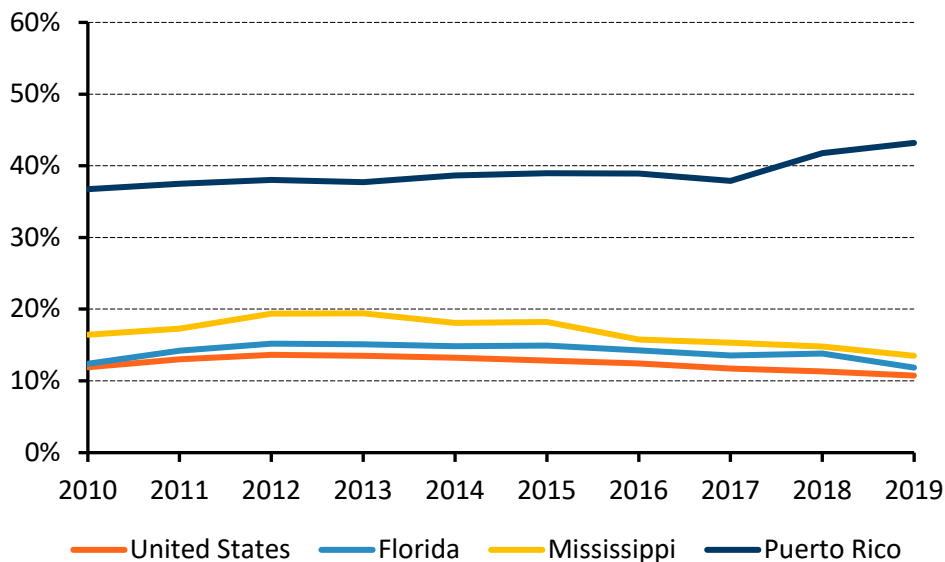


Source: U.S. Census Bureau. See Appendix 13 for additional details.

- 3.5 As one relevant illustrative example, the percentage of people receiving food stamps in Puerto Rico has been above 40% for most of this century and in the recent data this figure is moving up towards 50%. This is more than double the percentage in the U.S. on average, or in Mississippi (the state with the most food stamp recipients as a percentage of the population), or in Florida (an important comparator as so many Puerto Ricans have family networks already established there); see Figure 4. Note that Puerto Rico has strict eligibility requirements for food stamps.⁶

⁶ Implementing Supplemental Nutrition Assistance Program in Puerto Rico, U.S. Department of Agriculture, June 2010, pages 34 to 39 [\[link\]](#).

Figure 4: Percentage of households receiving food stamps, 2010 to 2019 (%)



Source: U.S. Census Bureau. See Appendix 13 for additional details.

- 3.6 Other measures of food insecurity paint a consistent picture. For example, the Puerto Rico Institute of Statistics estimated in 2015 that 33.2% of the population on the island was food insecure and 9.0% were very food insecure (the equivalent percentages for the 50 states were 12.4% and 4.6%). The percentage of people over the age of 65 who were food insecure in Puerto Rico was 21.4%.⁷
- 3.7 In addition to low levels of income in normal times, Puerto Rico has weak buffers against shocks, including from those inflicted by natural disasters. In many parts of the U.S., family wealth in the form of housing equity is an important consideration, because people can borrow against the equity value of their house (total house value minus outstanding mortgage debt) when times are hard. However, unlike any of the 50 states, Puerto Rico has long had a great deal of informal housing (Table 2), i.e., the owner of a house does not have clear title to the property and therefore cannot borrow against their residence as collateral.

⁷ Food safety in Puerto Rico, Puerto Rico Institute of Statistics, 2015, pages 5 and 25 [\[link\]](#).

Table 2: Estimates of informal housing share in Puerto Rico

Source	Informal housing share estimate
Atkins	50%+
Puerto Rico Builders Association ⁽¹⁾	55% ⁽²⁾
American Bar Association	45-55% ⁽³⁾
Puerto Rico Planning Society	20% ⁽⁴⁾
Reuters	25-50%

Notes: (1) This is the measure of informal construction also used by the Puerto Rican government; (2) This is based on both commercial and residential construction; (3) this measure includes commercial buildings as well; and (4) this is described as a “very conservative” estimate.

Sources: Puerto Rico’s Non-Traditional Disaster Recovery, Koch, Atkins, May 18, 2018 [\[link\]](#); Housing is key to Puerto Rico’s recovery. Will 2019 see promised funding, solutions, Acevedo, NBC News, February 4, 2019 [\[link\]](#); The Lack of Proof of Ownership in Puerto Rico Is Crippling Repairs in the Aftermath of Hurricane Maria, Garcia, American Bar Association, April 14, 2021 [\[link\]](#); The Housing Crisis in Puerto Rico and the Impact of Hurricane Maria, Hinojosa & Meléndez, Centro, June 2018 [\[link\]](#); and Puerto Rico to get \$18.5 billion to rebuild shattered housing market, Ortiz, Reuters, April 10, 2018 [\[link\]](#).

- 3.8 In part due to this informal nature of housing, many people also do not have homeowners’ insurance. When Hurricane Maria hit Puerto Rico in 2017, only 50% of households in Puerto Rico had homeowner’s insurance.⁸ This figure is far lower than is typical across the U.S., where around 93% of homeowners are reported to have had homeowner’s insurance at the beginning of 2017.⁹
- 3.9 The healthcare system in Puerto Rico is also more fragile than even in the hardest pressed parts of the 50 states, precisely because Puerto Rico only has access to a limited form of Medicaid, as it is not a state.¹⁰ There are fewer doctors and nurses per 100,000; other medical resources are also more constrained than in the 50 states (Table 3).

⁸ Puerto Rico Without Insurance – An Island in Turmoil, American Property Casualty Insurance Association, 2019, page 2.

⁹ 2016 Consumer Insurance Survey - Homeowners Insurance: Understanding, Attitudes and Shopping Practices, Insurance Information Institute, February 2017, page 3 [\[link\]](#).

¹⁰ For details, see Appendices 11 and 12.

Table 3: Access to emergency care in Puerto Rico and the U.S., 2014

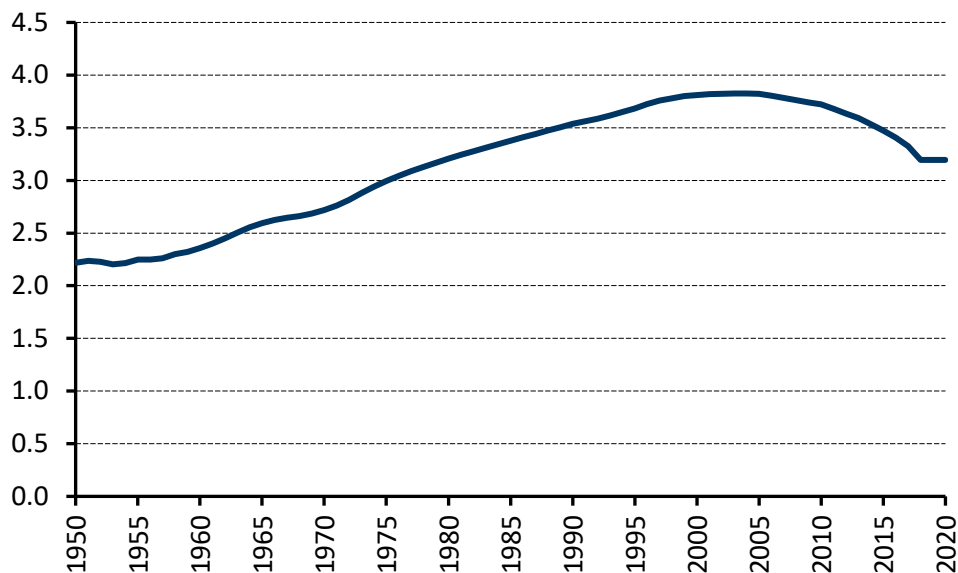
Statistic	Puerto Rico	US average	Diff.
Emergency physicians, per 100,000	5.4	13.5	(8.1)
Neurosurgeons, per 100,000	0.8	2.1	(1.3)
Orthopedists and hand surgeon specialists, per 100,000	3.5	9.7	(6.2)
Plastic surgeons per, 100,000	0.8	2.2	(1.4)
Ear Nose and Throat (ENT) specialists, per 100,000	1.7	3.5	(1.8)
Registered nurses, per 100,000	494.3	941.9	(447.6)
Additional primary care FTEs needed, per 100,000	2.5	2.5	-
Additional mental health FTEs needed, per 100,000	0.1	0.8	(0.7)
Accredited chest pain centers, per 1,000,000	0.3	2.5	(2.2)
Pediatric Specialty Centers, per 1,000,000	1.4	3.6	(2.2)
Percentage of adults underinsured	15.3	9	6.3
Emergency departments, per 1,000,000	4.4	18.9	(14.5)
Hospital closures in 2011	2	0.4	1.6
Staffed inpatient beds, per 100,000	243.2	329.5	(86.3)
Hospital occupancy rate, per 100 staffed beds	79.2	65	14.2
Psychiatric care beds, per 100,000	3.7	26.1	(22.4)
Median minutes from ED arrival to ED departure for admitted ED patients	778	272	506.0

Source: *America's Emergency Care Environment - A State-by-State Report Card*, American College of Emergency Physicians, 2014 edition, pages 120, 132, and 133 [\[link\]](#).

- 3.10 In the past, Puerto Rico has received ad hoc payments in the form of Medicaid block grants from Congress, but the future of these is uncertain. Pressure on the healthcare system and the potential deterioration in availability of affordable services increase the likelihood that people (including pensioners) will leave the island.
- 3.11 Given the overall depressed economic conditions, pervasive poverty, lack of secure title to housing, and a troubled health system, it is not surprising that the population has already declined significantly from a peak of 3.83 million in 2004 and is, according to the Census Bureau, now 3.29 million - close to its level 40 years ago.¹¹

¹¹ Puerto Rico's population as of 1 April 2020, U.S. Census Bureau, accessed July 16, 2021 [\[link\]](#).

Figure 5: Population of Puerto Rico, 1950 to 2020 (millions)

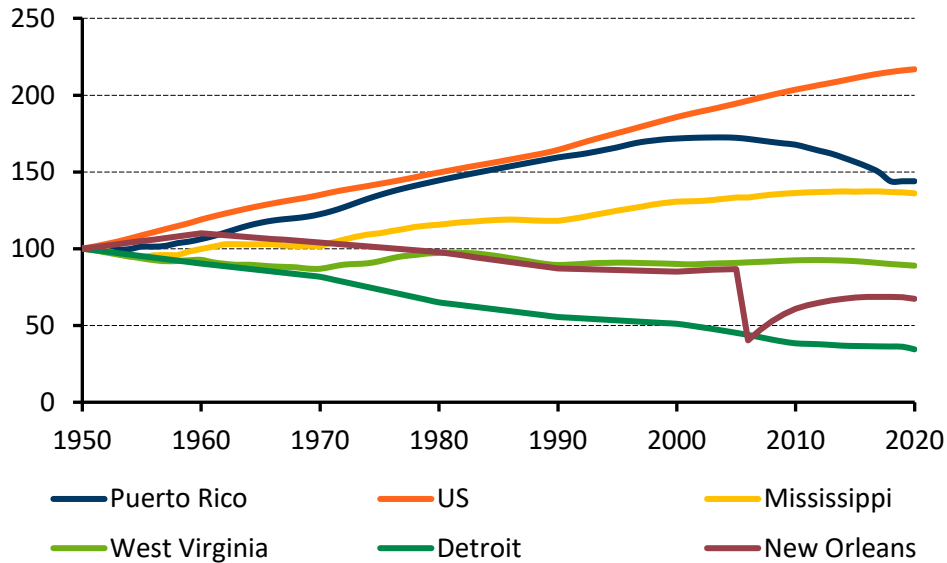


Note: I estimate population during the 1951 to 1959 (as data for these years are not available) by applying linear interpolation on population levels between 1950 and 1960.

Sources: U.S. Census Bureau (population for 1950); World Bank. See Appendix 13 for additional details.

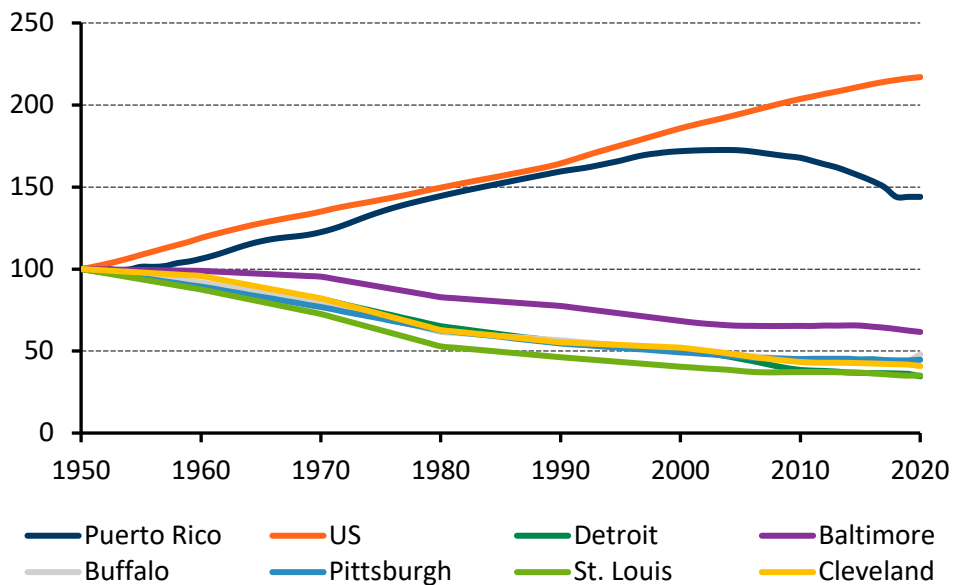
- 3.12 The extent of this recent net out-migration is extreme compared with what has happened to other parts of the U.S. in modern times. At the same time, it is not unprecedented - and depressed places in the U.S. do not necessarily or automatically turn around in demographic terms. A review of the experience in other areas of the U.S. since 1960 also suggests that the population in Puerto Rico could easily fall further in coming decades.
- 3.13 Figures 6a and 6b show that population growth in states such as Mississippi and West Virginia has been significantly slower than in the U.S. as a whole. West Virginia has actually had a small decline over this 60-year period. Cities such as Detroit and Baltimore have shown a steady decline in population, as has New Orleans, even excluding the short-term impact of Hurricane Katrina (Figure 6c). The decline in population in Puerto Rico is more recent, but it is entirely possible that this could be the start of a longer-term trend.

Figure 6a: Population in Puerto Rico compared with the U.S. and selected states and cities, 1950 to 2020 (indexed, 1950 = 100)



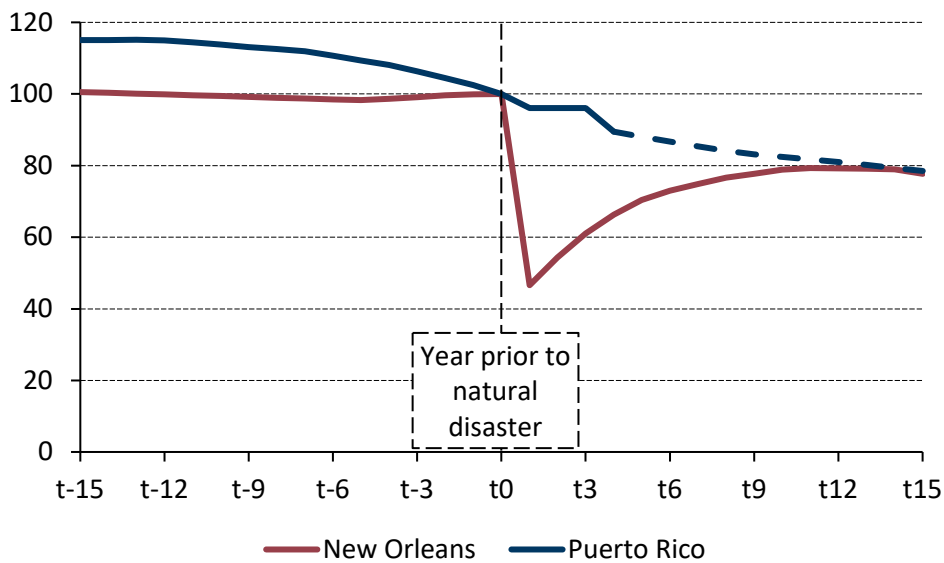
Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

Figure 6b: Population in Puerto Rico compared with the U.S. and selected states and cities, 1950 to 2020 (indexed, 1950 = 100)



Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

Figure 6c: Population in Puerto Rico and New Orleans before and after Hurricane Maria and Hurricane Katrina respectively, (t-15 to t15, indexed, year prior to natural disaster = t0 = 100)

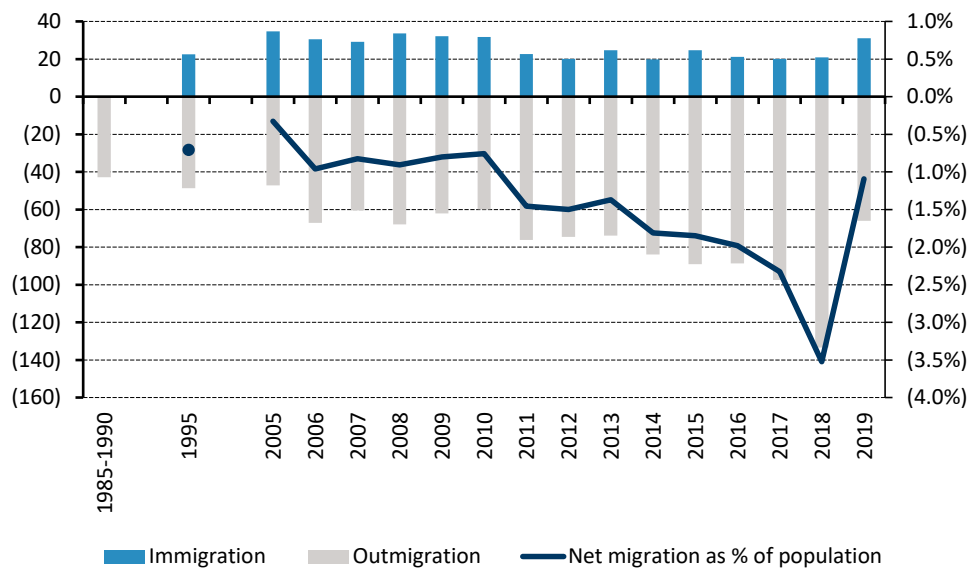


Notes: (1) the years shown in Figure 6c end on 30 June; (2) t0 for Puerto Rico is the year ending June 30, 2017; (3) t0 for New Orleans is the year ending June 30, 2005; and (4) population figures for Puerto Rico from t3 (2020) onwards are forecasts from the 2021 FOMB Fiscal Plan and are represented by the dotted line.

Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

- 3.14 According to the latest available data, the rate of net out-migration continues to be substantial (Figure 7).

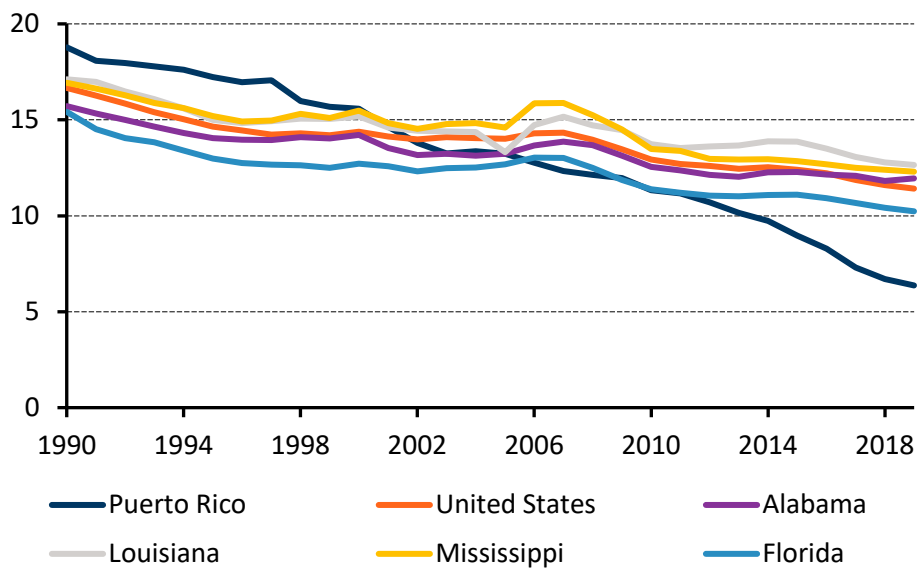
Figure 7: Puerto Rican net migration to and from U.S. states, 1985 to 2019 (left axis: thousands of people, right axis: net migration as % of population)



Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

- 3.15 Over the past 30 years, there has also been a dramatic decline in fertility in Puerto Rico. In 1990, Puerto Rico had a higher birth rate (live births per 1,000 population) than many states. Now it has one of the lowest birth rates.

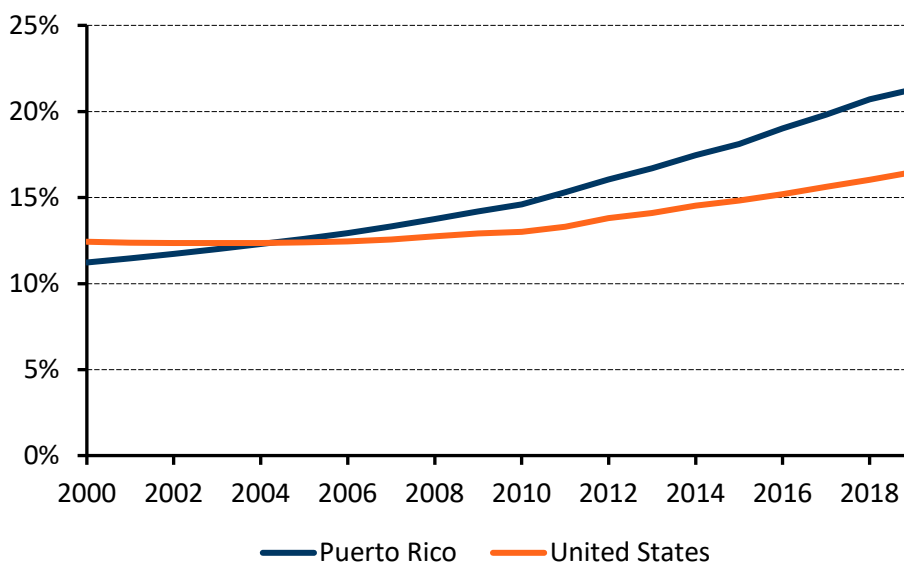
Figure 8: Live births per 1,000 population in Puerto Rico and selected states, 1990 to 2019



Sources: U.S. Census Bureau; World Bank; Centre for Disease Control and Prevention website. See Appendix 13 for additional details.

- 3.16 As a consequence of declining fertility and the fact that younger people tend to have higher rates of out-migration, pensioners have become a more important part of the economy. From 2010 to 2018, the share of the population over the age of 65 increased from 15% to 21%, an unusual phenomenon compared with the 50 states (Figure 9).

Figure 9: Population over 65 as a share of total population, 2000 to 2019



Sources: U.S. Census Bureau; World Bank. See Appendix 13 for additional details.

- 3.17 Over the past two decades, Puerto Rico has been exposed to a major financial crisis, two devastating hurricanes, and a public health crisis. In virtually all instances, the resources received from the federal government were less than what was received by places in the 50 states that experienced similar shocks. A good example is hurricane relief, on which the experience of Puerto Rico can be compared with what happened after similar sized shocks in Florida and Texas.

Table 4: Cumulative federal dollars distributed post-landfall (\$ millions)

Days post landfall	Harvey (Texas)	Irma (Florida)	Maria (Puerto Rico)
9	142	93	6
30	333	739	114
60	1,280	899	-
80	-	-	510
100	-	958	724
120	-	-	1,020
150	1,500	-	1,080

Source: Quantifying inequities in U.S. federal response to hurricane disaster in Texas and Florida compared with Puerto Rico, Willison, Singer, Creary, and Greer, BMJ Global Health, 2019, page 3 [\[link\]](#).

4. Pensions and Pensioners

- 4.1 In the latest available statistics, for 2016, there were 647,501 people in Puerto Rico over the age of 65. The Retiree Committee represents approximately 167,000 people who are former government employees (Table 5).

Table 5: Government pensioners as percentage of Puerto Rico population, 2016

Pensioners represented by the Retiree Committee	166,576
Population of over 65s on the island	647,501
Total population on the island	3,406,672
% of over 65s in Puerto Rico represented by the Retiree Committee	25.7%
% of population in Puerto Rico represented by the Retiree Committee	4.9%

Note: Membership of Puerto Rico's retirement systems as of July 1, 2016 for ERS and TRS, and July 1, 2015 for JRS.

Sources: (1) Population of Puerto Rico, World Bank, accessed May 6, 2021 [\[link\]](#); (2) Report on the Puerto Rico Retirement Systems, EY, September 2019, page 2 [\[link\]](#); and (3) 2010-2019 Age and Sex population distribution, U.S. Census Bureau, accessed May 6, 2021 [\[link\]](#).

- 4.2 Including current employees, there were 318,549 members of pension plans for government employees in 2016, the latest available data (Table 6). A small number are (or were) judges, who participate in the Judiciary Retirement System (JRS). About one quarter are (or were) teachers, members of the Teachers Retirement System (TRS), and the majority are or were other government employees, who receive pensions through the Employee Retirement System (ERS). All three of these systems were, until recently, defined benefit systems, i.e., in return for lower compensation during their working careers, members received a promise of deferred compensation in the form of a formula-based defined pension benefit administered by these systems.

Table 6: Summary of retirement systems, 2016

	ERS	TRS	JRS	Total
Active members	118,657	32,952	364	151,973
Pensioners and beneficiaries	122,757	43,305	514	166,576
Terminated vested members	Unknown	1,100	39	Unknown
Total pension plan members	241,414	77,357	917	318,549

Source: Report on the Puerto Rico Retirement Systems, EY, September 2019, page 2 [\[link\]](#).

- 4.3 Some members of the ERS, although not the police, were previously (i.e., before PROMESA) enrolled in the federal social security system. Teachers and judges were not previously enrolled in federal social security.¹²

¹² For a precise statement of prior adjustments to pension plan arrangements, see Appendix 4.

Table 7: ERS members by occupation (number of people)

	Active	Retired	Beneficiary	Total
Police	14,709	11,342	1,647	27,698
Other occupations	103,948	97,451	12,317	213,716
Total ERS members	118,657	108,793	13,964	241,414

Source: Segal pension data, September 8, 2021, slide 4.

- 4.4 The gross income of pensioners represented by the Retiree Committee amounts to around 6% of total household expenditure on the island.

Table 8: Retiree Committee pensioners' income as a percentage of total household expenditure and GNI in Puerto Rico, as of 2016

	Calc. guide	2016
Average annual pension of government retirees (\$)¹	A	14,016
Average social security paid to government retirees (\$)¹	B	9,430
Average annual income of government retirees (\$)	C = A + B	23,446
Pensioners represented by the Retiree Committee²	D	166,576
Total annual income of pensioners (\$ billions)	E = C X D	3.91
Household consumption expenditure in Puerto Rico (\$ billions)³	F	60.98
GNI of Puerto Rico (\$bn)⁴	G	67.15
Pensioners' income as % of household expenditure	H = E / F	6.4%
Pensioners' income as % of GNI	I = E / G	5.8%

Sources: (1) Appendix 7, Table A7-4; (2) Table 6 above; (3) Households and non-profit institutions serving households (NPISH) final consumption expenditure in Puerto Rico, World Bank, accessed August 13, 2021 [\[link\]](#); and (4) GNI in Puerto Rico, World Bank, accessed August 13, 2021 [\[link\]](#). See Appendix 13 for additional details.

- 4.5 Most of these incomes are already very low. For more than half of all government retirees, pension benefits from these plans are already close to or below the federal poverty level, which was \$11,880 per annum for a single person household in 2016 (I used 2016 data so as to compare with the pensioners' income for 2016, shown in Table 9).¹³ In Appendix 8, I discuss the price level in Puerto Rico. Energy and food in Puerto Rico are relatively expensive compared with the U.S. mainland. Overall, however, the price level for a basic basket of goods is similar and it is reasonable to use the federal poverty level as a benchmark against which to assess the real purchasing power of incomes in Puerto Rico.

¹³ 2016 Poverty Guidelines, Office of the Assistant Secretary for Planning and Evaluation, January 25, 2016 [\[link\]](#).

Table 9: Distribution of system benefits by number of pensioners, 2016

Pension system	Less than \$12,000 per annum	Over than \$12,000 per annum	Total
ERS	74,368	48,389	122,757
TRS	11,860	31,445	43,305
JRS	12	436	448
Total	86,240	80,270	166,510

Source: Segal pension data, September 8, 2021, slides 4 and 5.

- 4.6 All of these pensions have already, over the past decade, been reduced substantially. In Appendix 4, I break down these previous cuts by category. Depending on how long a person worked for the government and when exactly they retired, the value of their pension was cut prior to a PROMESA Plan of Adjustment by varying, but substantial, degrees.
- 4.7 The three main categories of ERS members are known as Act 447, Act 1, and System 2000, with their status determined by when they joined the pension system. According to the latest available data as of June 30, 2016, there are 109,000 pensioners and beneficiaries under Act 447; 13,000 under Act 1; and 1,500 under System 2000.

Table 10: Retirees' pension income stratification, 2016

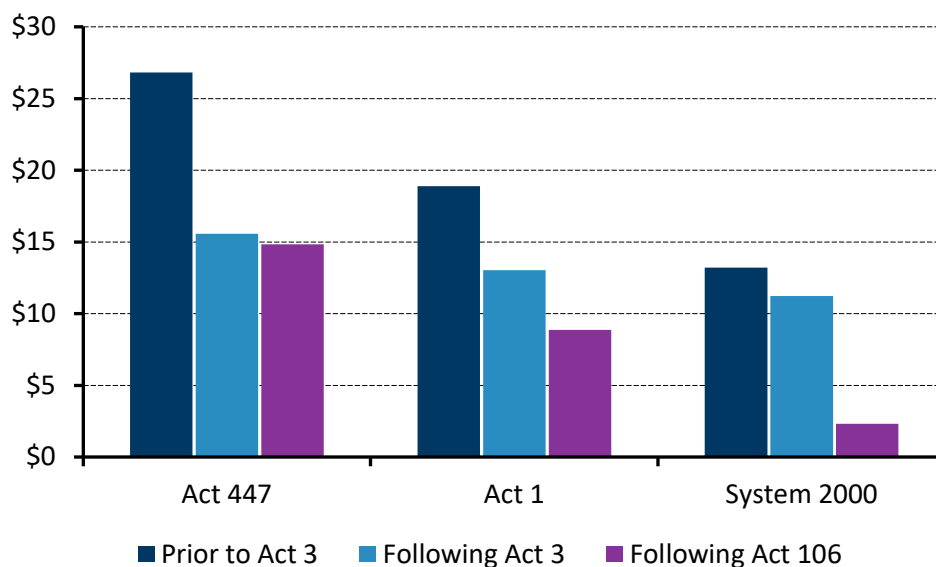
System	# of Retirees by Pension Income Level						Monthly pensions	
	≤ \$1,000	≤ \$1,500	≤ \$1,800	≤ \$2,000	≤ \$2,001+	Total	Average	\$2,001+ average pension
Act 447	64,464	19,882	7,841	4,243	12,307	108,737	\$1,084	\$2,892
Act 1	8,763	2,785	465	147	397	12,557	\$857	\$2,757
System 2000	1,141	192	32	10	88	1,463	\$759	\$2,990
ERS	74,368	22,859	8,338	4,400	12,792	122,757	\$1,057	\$2,888
TRS	11,860	12,808	3,124	4,605	10,908	43,305	\$1,449	\$2,261
JRS	12	32	18	12	374	448	\$4,519	\$5,153
Total	86,240	35,699	11,480	9,017	24,074	166,510	\$1,168	\$2,639

Source: Segal pension data, September 8, 2021, slide 4.

- 4.8 In Figure 10, the first bar shows average monthly benefit before the first round of pension cuts, which are known as Act 3. The second bar for each group of members shows average monthly benefit after Act 3, and the third bar shows average monthly benefit after further cuts, known as Act 106, were made.

- 4.9 Looking at the full set of cuts in Figure 10, all of which were prior to a PROMESA Plan of Adjustment, Act 447 members have suffered about a 40% cut, while Act 1 members have been cut by about the same percentage, but from a lower initial level. System 2000 members will now receive almost nothing by way of a defined benefit pension. All new members will receive only a defined contribution pension, i.e., they need to pay into a retirement account in order to receive a pension.

Figure 10: Average ERS members' benefit before and after the implementation of Act 3 and Act 106 (\$ thousands)



Source: Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12 and 13 [\[link\]](#).

- 4.10 The agreement between the Retiree Committee and the FOMB would impose a cut of up to 8.5% in payments to retirees whose pension benefits exceed \$1,500 per month. Pensions may be cut down to but not below a floor of \$1,500 per month. Any level of cuts is likely to have a negative impact, however the proposed cuts would not affect the pensions of 72% of government retirees (approximately 120,000 members).¹⁴ In comparison, under the original FOMB proposal, only 36% of retirees would have been unaffected (approximately 60,000 members).¹⁵ The agreement is thus an improvement on what the FOMB previously proposed.

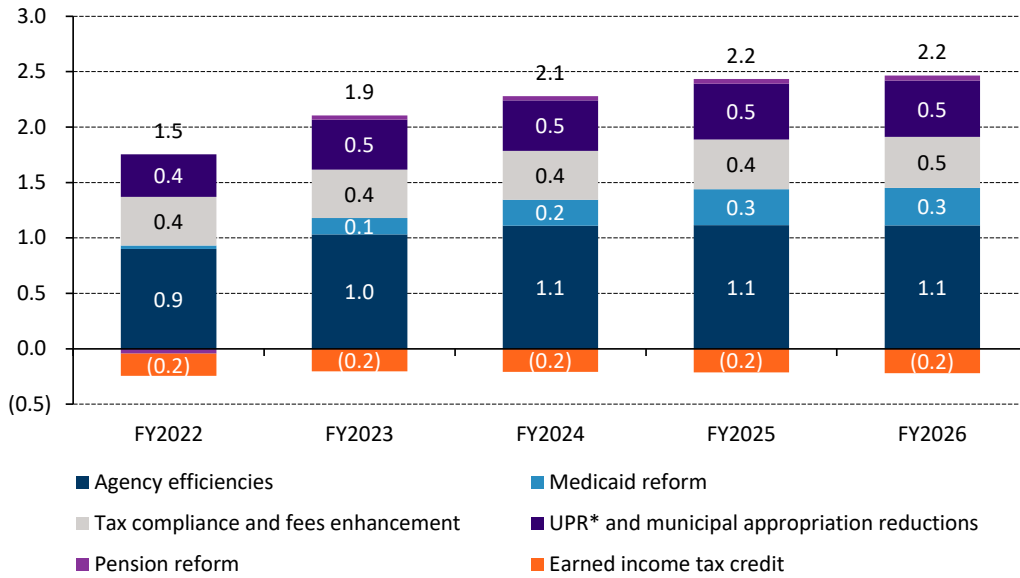
¹⁴ 2021 Fiscal Plan, FOMB, April 23, 2021, page 277. I note that, based on the figures provided by Segal in Table 10, approximately 73% of retirees would not be subject to a benefit reduction ($(86,240 + 35,699)/166,510 = 73.2\%$).

¹⁵ 2019 Fiscal Plan, FOMB, May 9, 2019, page 131. An earlier version of the FOMB Fiscal Plan, dated October 23, 2018, estimated that 25% of retirees would not be subject to a benefit reduction under the original FOMB proposal (page 123).

- 4.11 Since 2008 (except for JRS), there have been no cost-of-living adjustments (“COLAs”) to pensions. Should this continue to be the case, this will represent a significant additional loss of purchasing power.
- 4.12 The affected groups include both current retirees and people who either work for the government now or may consider working for the government in the future, including as teachers, judges, police, or in any official position. Not only are projected pensions now lower, but given what has happened over the previous two decades, actual and potential workers may reasonably expect further downward pressure on pensions. This is a definite discouragement to any form of government service. Anyone inclined to work as a teacher, police officer, judge, or other government official would almost certainly be better off financially if they can find such a position in the 50 states.
- 4.13 According to the FOMB’s analysis, of the \$4,769 million net pension reform savings from FY2022-2051, \$1,916 million (40.2%) is attributable to the pension cut of up to 8.5% (with \$1,500 threshold).¹⁶
- 4.14 The proposed pension cuts are a small part of the overall fiscal adjustment being overseen by the FOMB. The total reduction in pensions will likely amount to less than 10% of the total cut in government spending over the next 30 years, relative to its baseline (as defined by the FOMB).

¹⁶ 2021 Fiscal Plan model, FOMB, April 23, 2021, tab “Pensions”, row 68.

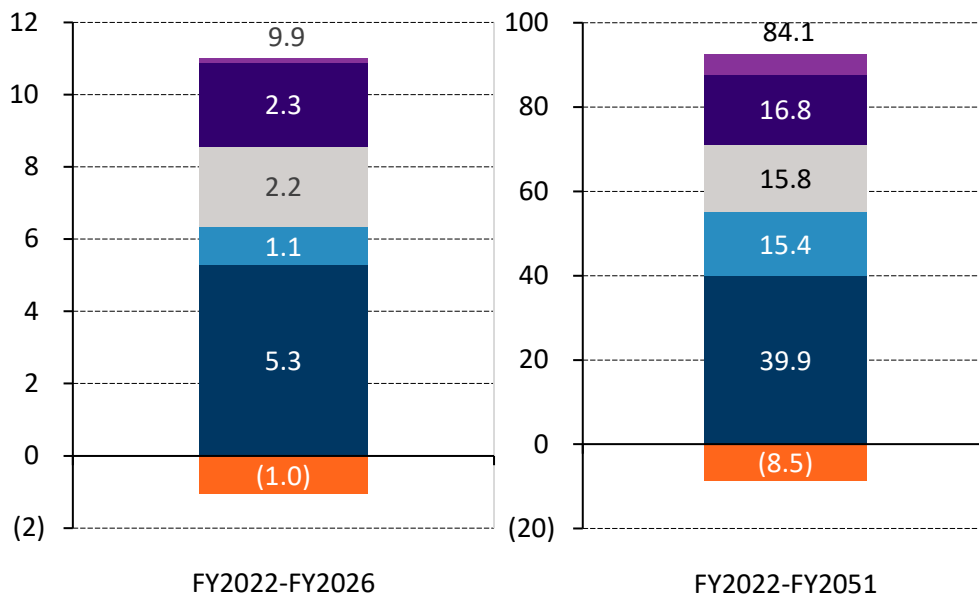
Figure 11a: Annual impact of fiscal measures in FOMB's 2021 fiscal plan, FY2022 to FY2026 (\$ billions)



Note: *UPR stands for "University of Puerto Rico".

Source: (1) 2021 Fiscal Plan, FOMB, April 23, 2021, page 149; and (2) 2021 Fiscal Plan model, FOMB, May 11, 2021, tab "Measures build".

Figure 11b: Cumulative impact of fiscal measures in FOMB's 2021 Fiscal Plan (\$ billions)



Source: (1) 2021 Fiscal Plan, FOMB, April 23, 2021, page 149; and (2) 2021 Fiscal Plan model, FOMB, May 11, 2021, tab "Measures build".

Other Source of Income for Pensioners

- 4.15 In some parts of the U.S., a retired person suffering a cut in their defined benefit pension would have other sources of income and assets to fall back on. However, in Puerto Rico such buffers are weaker than in the 50 states.
- 4.16 Average federal social security income in Puerto Rico, at around \$11,000, is 29% lower than in the U.S. state with the lowest average social security income, Maine, around \$15,000.¹⁷ This reflects the fact that wages are lower in Puerto Rico than in the 50 states. In addition, currently retired police officers (ERS), teachers (TRS), and judges (JRS) were not part of the federal social security system, did not accrue social security benefits, and therefore do not receive this source of income once retired.¹⁸
- 4.17 More broadly, across the U.S. a major component of household net worth is housing wealth (i.e., total house value minus the amount owed on any mortgage). This is an important potential buffer for individuals as it is possible to take out a second mortgage or, depending on interest rates, to refinance a mortgage, so as to borrow against this equity. So-called cash out refinancing have increased sharply in the past year in the 50 states.
- 4.18 During the 2010s, the average value of real estate decreased in Puerto Rico, while the value of real estate in the U.S. increased significantly. From 2010 to 2019 the median value of an owner-occupied home declined from \$120,300 to \$110,300 in Puerto Rico (8% decrease), while in the U.S. the same figure increased from \$179,900 to \$240,500 (34% increase). In 2019, the latest available data from the Census Bureau indicates that the median property value in Puerto Rico (\$120,300) was less than half the median value in the U.S. as a whole (\$240,500).¹⁹
- 4.19 In addition, there is a lack of clear title for many residences, as discussed in Table 2 above. This further reduces the ability of retired people (and everyone else) to borrow against the equity in their house.

¹⁷ See Appendix 7.

¹⁸ 2021 Fiscal Plan, FOMB, April 23, 2021, page 277. Effective January 1, 2020, police officers began actively participating in Social Security.

¹⁹ Median value of owner-occupied housing units, U.S. Census Bureau, accessed September 7, 2021 [[link #1](#)], [[link #2](#)]. All figures are in nominal terms.

5. The Macroeconomic Consequences of Potential Further Cuts to Pensions

Macroeconomic impact

- 5.1 Puerto Rico has a low average income compared to the 50 states, and many pensioners represented by the Retiree Committee already live at or close to the poverty line. As shown in Table 9, approximately 86,000 pensioners (52%) received pension benefits below the federal poverty level in 2016.²⁰ At the same time, the spending of this group on food, housing, medical care, and other necessities is a significant part of the depressed local economy.
- 5.2 According to the FOMB, the “fiscal multiplier” on average is 1.34, meaning that a \$1 reduction in government spending (e.g., on pensions) will result in a \$1.34 reduction in overall spending in Puerto Rico in the first year.²¹ This multiplier is larger than one precisely because lower government outlays reduce incomes (e.g., for pensioners) and they in turn spend less, which reduces the incomes of store/restaurant owners, workers in those stores, etc. (This is a standard way to think about the effects of changes in government spending.)
- 5.3 A multiplier of 1.34 may be plausible for ordinary (non-crisis) times in the U.S. as a whole. However, this value for the fiscal multiplier is at the low end of what is plausible for Puerto Rico today because of the prolonged economic slump.
- 5.4 In addition, the 1.34 multiplier is derived from work that was designed to calculate a national level fiscal multiplier estimate, and this assumes a potential offset to fiscal policy actions from monetary policy.²² Under many national circumstances, when the fiscal authority (Congress or the executive branch) reduces spending, the central bank can loosen monetary policy, to prevent unemployment from increasing too much. However, the Federal Reserve System does not adjust interest rates as Puerto Rico’s conditions change, if those conditions are out of sync with what the Fed regards as broader macroeconomic developments.

²⁰ This excludes incomes from Social Security, as discussed in Appendix 7.

²¹ 2021 Fiscal Plan model, FOMB, April 23, 2021, tab “Macro Forecast”, cell D39.

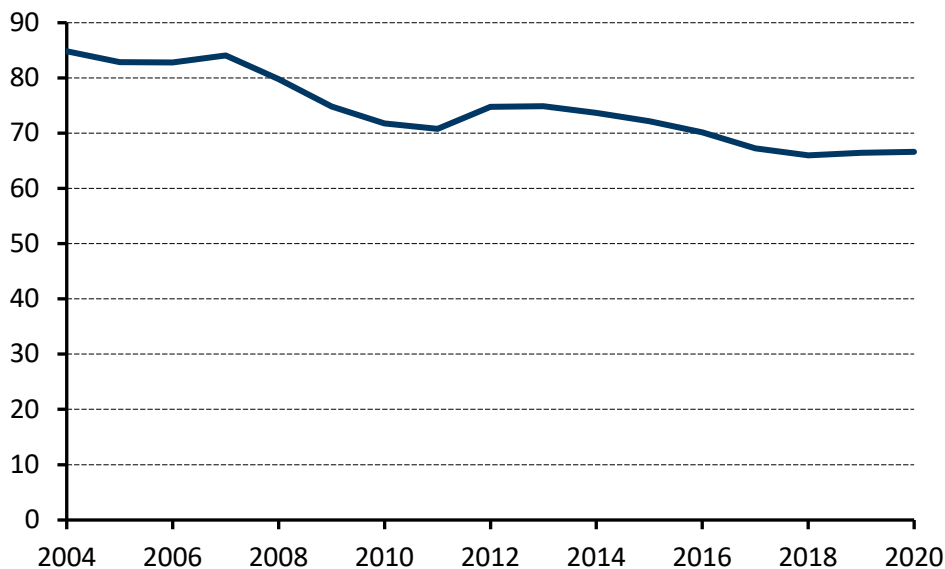
²² Fiscal Stimulus in a Monetary Union, American Economic Review, Nakamura and Steinsson, March 2014 [\[link\]](#). I understand that this paper is used to calculate fiscal multiplier in Puerto Rico’s fiscal plans based on AAFAF’s 2016 Fiscal Plan, page 89.

- 5.5 The FOMB appears to draw upon a particular line of research (and, in fact, one particular paper) that assesses broader national-level U.S. fiscal policy as the basis for its fiscal multiplier estimate of 1.34.²³ This research is well-regarded and was carefully conducted. However, in this same paper, the authors also find fiscal multipliers that are as high as 3.54 to 4.31 in specific situations, such as in states that have high unemployment rates.²⁴ This range of results makes sense intuitively, because fiscal policy is likely to have much larger effects - helping to stabilize or boost the broader economy - when other forms of spending are low, and the private sector is generally discouraged.
- 5.6 State level multipliers will also always tend to be higher than national level estimates, due to the fact that the Federal Reserve will not tend to adjust monetary policy based on state-level or even regional situations; it responds only to what its Open Market Committee sees as the national situation.
- 5.7 For example, if the U.S. economy as a whole is recovering, as is now the case, while Puerto Rico embarks on another round of fiscal cuts, then monetary policy is more likely to tighten (or at least not to loosen further) and therefore will not counteract the contractionary effects of fiscal policy on the island. This combination of circumstances would tend to increase the fiscal multiplier above 1.34.
- 5.8 The high unemployment version of the fiscal multiplier is much more likely to fit the reality of Puerto Rico, which has been in consistent decline since 2005 and which has been subjected to repeated shocks over more than a decade.
- 5.9 The figure below shows Puerto Rico's real Gross National Income ("**GNI**") from 2004 to 2020, which shows a 23% decline over this 16-year period. Puerto Rico's real GNI has declined every year from 2013 to 2019.

²³ Fiscal Stimulus in a Monetary Union, American Economic Review, Nakamura and Steinsson, March 2014, page 763 (Table 2) [\[link\]](#).

²⁴ Fiscal Stimulus in a Monetary Union, American Economic Review, Nakamura and Steinsson, March 2014, page 769 (Table 5) [\[link\]](#).

Figure 12: Real GNI of Puerto Rico, 2004 to 2020 (2018 \$ billions)



Source: World Bank. See Appendix 13 for additional details.

- 5.10 The 2021 Fiscal Plan shows savings of \$90 million in FY2023 resulting from the proposed pension cut of up to 8.5%, when there is a \$1,500 per month threshold (i.e., pensions are not cut below that level).²⁵ Gross National Product (“GNP”) is forecast to be \$73.2 billion this year.²⁶ Using the fiscal multiplier of 1.34 in the Fiscal Plan model, this pension cut implies a 0.2% contraction in GNP.²⁷ (Note: these calculations do not assume any potential out-migration triggered by pension cuts (i.e. all pensioners stay on the island). Increased out-migration would result in significantly larger impacts, as discussed below).
- 5.11 To put this in context, the 2021 FOMB Fiscal Plan model anticipates -0.1% average real GNP growth per annum between 2020 and 2037, and -0.5% beyond that, for the remainder of the forecasted period.²⁸
- 5.12 While the Fiscal Plan does not show forecasts for employment, total employment in Puerto Rico in June 2021 was approximately 980,000.²⁹

²⁵ 2021 Fiscal Plan model, FOMB, April 23, 2021, tab “Pensions”, cell J68.

²⁶ 2021 Fiscal Plan model, FOMB, 23 April 2021, tab “Macro Forecast”, cell N24.

²⁷ $(\$90 \text{ million} \times 1.34) / \$73,156 \text{ million} = 0.16\%$.

²⁸ 2021 Fiscal Plan model, FOMB, April 23, 2021, tab “Macro Forecast”, row 20.

²⁹ Puerto Rico - Economy at a glance, U.S. Bureau of Labor Statistics, 3 June 2021 [\[link\]](#).

- 5.13 Scaling the employment effect to be consistent with the change in GNP suggests that around 1,600 jobs would be lost as a result of the proposed cut of up to 8.5% (with the \$1,500 threshold), based on using the 1.34 multiplier.³⁰
- 5.14 The FOMB's model further assumes that the contractionary effects of fiscal policy - on GNP and, by implication, on employment - would be unwound over 5 years. The underlying assumption here is one of mean reversion for growth (i.e., growth rates tend to return to their previous average level), as well as the assumption that the private sector expands to fill the space left by the reduced public sector spending. In the case of pension cuts, the existence and timing of a full rebound effect is quite uncertain.
- 5.15 One alternative scenario - i.e., not currently on the table - is the original FOMB proposal, which was for a cut of 25% in pensions in excess of \$600 (for non-police ERS members) or \$1,000 (for all other groups) of received monthly benefits.³¹ FOMB estimated related savings of \$236 million in FY 2023, i.e., almost triple the fiscal effect of the proposed pension cuts.³² Applying a plausible fiscal multiplier of around 2 would indicate a 0.6% reduction in GNP.³³ This would imply employment declines by around 6,300 jobs.³⁴
- 5.16 Another alternative scenario - again, to construct a hypothetical possibility, in order to illustrate the magnitudes at issue - would be to cut all pensions above \$1,000 per month down to \$1,000 per month, which is approximately the federal poverty level. Roughly, this would result in fiscal savings of \$772 million in FY2023, i.e., roughly eight times what is in the current Fiscal Plan.³⁵
- 5.17 Applying a fiscal multiplier of 3 to such a large pension cut implies a total contractionary effect on GNP of 3.2%³⁶ and the loss of about 31,000 jobs.³⁷

³⁰ $980,000 \times 0.16\% = 1,615$.

³¹ 2019 Fiscal Plan, FOMB, May 9, 2019, page 131.

³² 2019 Fiscal Plan model FOMB, May 9, 2019, tab "Pensions", cell J68.

³³ $(\$236 \text{ million} \times 2.00) / \$73,156 \text{ million} = 0.645\%$.

³⁴ $980,000 \times 0.645\% = 6,300$.

³⁵ To calculate \$772 million of savings, I first calculate annual pension expense prior to cuts of \$2,334 million (166,510 retirees x \$1,168 average monthly pension x 12 months = \$2,334 million, see Table 10). I then calculate the annual pension expense after cuts as \$599 million (annual pension expense for retirees with <1,000\$ of monthly pension) + 80,270 (number of retirees with less than \$1000 of monthly pension benefits) x \$12,000 = \$1,562 million. Savings from the cuts equal to \$2,334 million - \$1,562 million = \$772 million. For individual figures, see Segal pension data, September 8, 2021, slide 3.

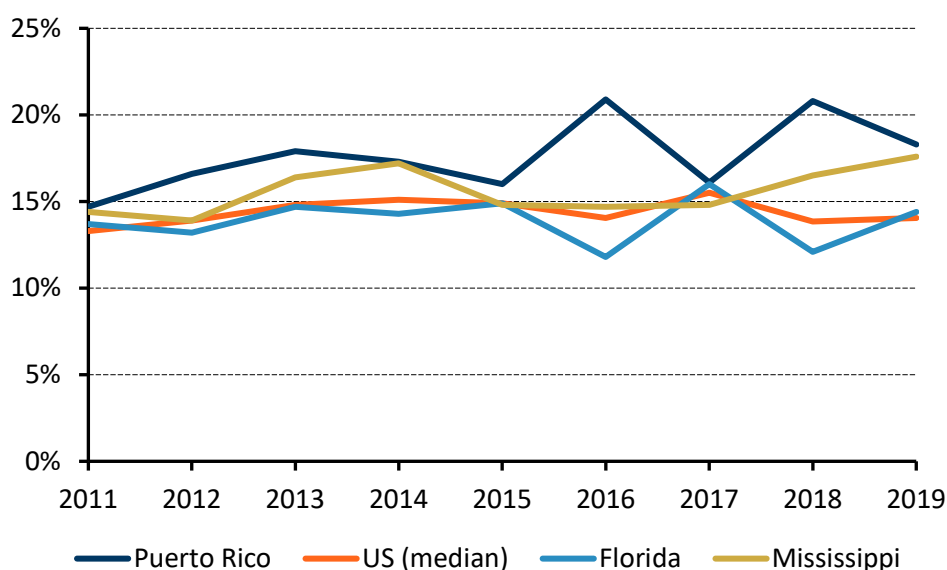
³⁶ $(\$772 \text{ million} \times 3.00) / \$73,156 \text{ million} = 3.17\%$.

³⁷ $980,000 \times 3.17\% = 31,026$.

Health impact

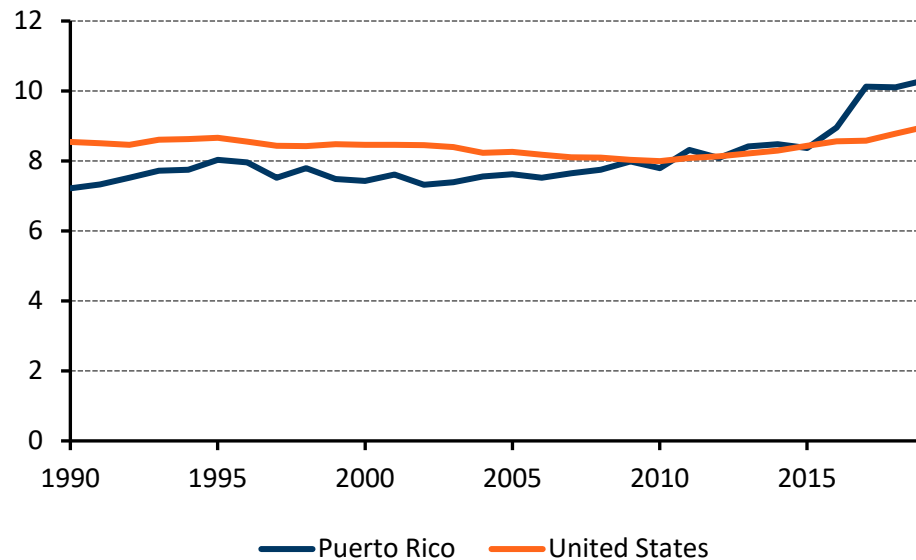
- 5.18 In addition, there will be other direct impacts on pensioners, including their physical and mental health.
- 5.19 In general, reducing income leads to a worsening of health, and this has already been the experience in Puerto Rico. Not surprisingly, Puerto Rico has relatively high rates of depression among people over the age of 65 - and these rates spike in years of crisis (Figure 13). At the same time, access to many forms of healthcare has declined, particularly as doctors and other trained clinicians have become more likely to leave the island.

Figure 13: Percentage of population aged over 65 with diagnosed depression, 2011 to 2019 (%)



Source: Centers for Disease Control and Prevention website. See Appendix 13 for additional details.

Figure 14: Mortality rate of Puerto Rico and the U.S., 1990 to 2019 (per 1,000 people)



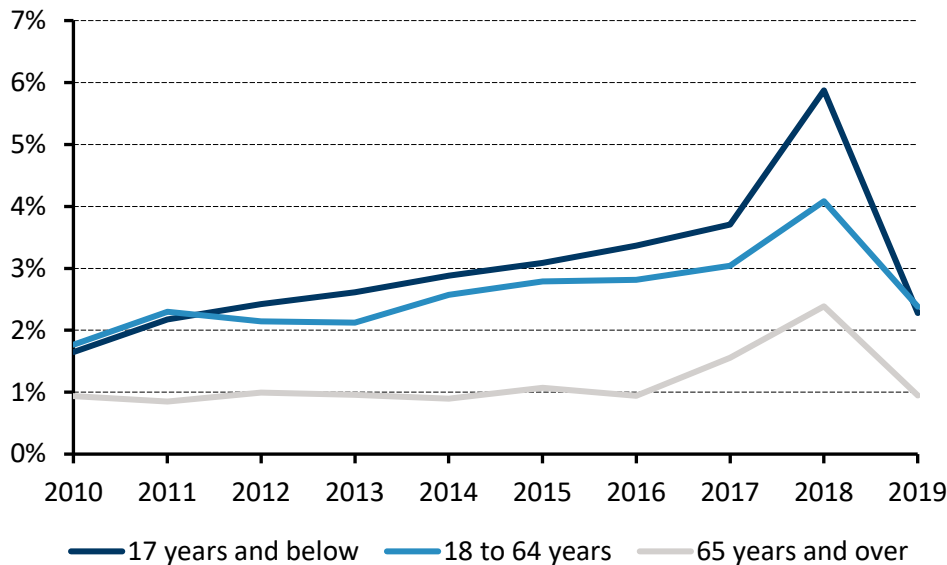
Sources: World Bank; Global Health Data Exchange website. See Appendix 13 for additional details.

- 5.20 Overall, the picture that emerges from both the income and health data is similar. This is a very stressed population, and people over the age of 65 seemed to have borne the brunt of the damage, because - so far - they have been relatively more likely to stay on the island.

Out-migration

- 5.21 Given the precarious nature of Puerto Rico's situation and its recent history, the most likely outcome from further pension cuts would be further out-migration, both directly (as a matter of survival, pensioners would leave to live with family in the 50 states) and indirectly (because local spending and employment prospects decline). Figure 15 shows that while out-migration rates are consistently higher in younger age groups, since 2016 out-migration among pensioners has definitely accelerated - reflecting economic conditions and the struggle to recover from two hurricanes.
- 5.22 These out-migration rates per year are large relative to any migration experience and are particularly striking in the modern U.S. context, where they would be matched only by episodes of severe and prolonged decline in some large urban centers and also a few relatively remote rural areas.

Figure 15: Puerto Rican out-migration to the U.S. as a proportion of age group, 2010 to 2019 (%)

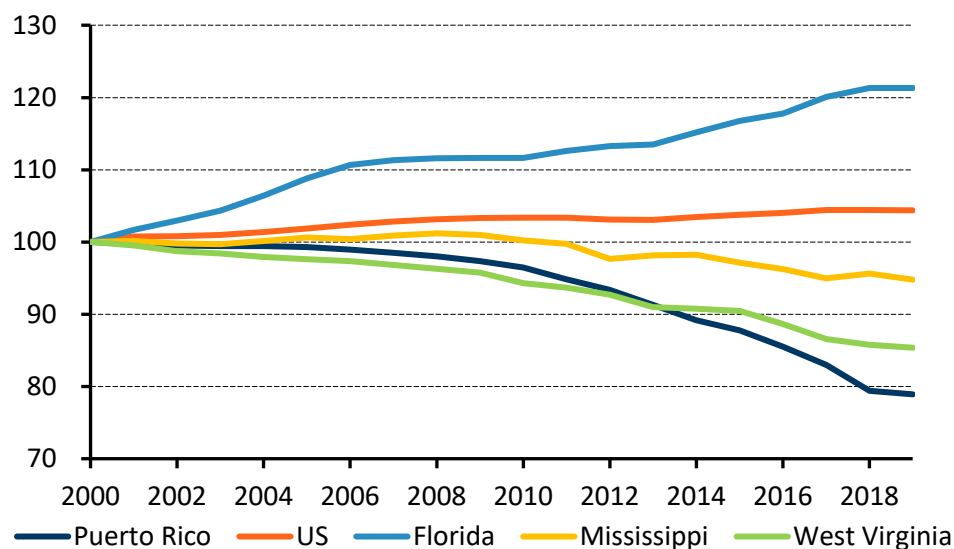


Note: Proportions for each age group are calculated as people that migrated to the U.S. during the year divided by the number of people living in Puerto Rico at the start of the year. Source: U.S. Census Bureau. See Appendix 13 for additional details.

- 5.23 In the modern U.S., there is no automatic bounce-back mechanism for population levels when a local economy collapses, and people move out. The current population of Puerto Rico is 82% of its 2004 population peak, a remarkable decline but also still 35% higher than its population in 1960. A comparison with struggling U.S. cities over the same time frame is instructive. For example, Detroit's population is currently around 40% of its 1960 level, while Baltimore's population today is approximately 60% of its 1960 level. The population of Puerto Rico could potentially decline much more before it stabilizes.
- 5.24 Note that if pensioners leave Puerto Rico, the government will still pay their pensions (as may be modified by a PROMESA Plan of Adjustment) but the pensions would now be spent entirely elsewhere in the 50 states. In addition, a lower population means less use of the medical system in Puerto Rico and this will over time reduce the resources available to that system - both through Medicare and through future block grants from Congress (assuming that the arrangement stays in place). These declines are likely to further encourage doctors to leave Puerto Rico.
- 5.25 On the current trajectory, there are serious risks that the macroeconomy could sink further - even worse than the Fiscal Plan forecasts. In such a downward spiral, shops and schools would close, public transportation would not operate, and medical services would be curtailed. Public safety would likely also decline, which in turn would encourage further out-migration.

- 5.26 The prime working age population has already declined 20% since 2000, a larger decline than has been experienced in any of the 50 states, even those that experienced serious economic difficulties over this period (Figure 16). For example, the prime working age population in West Virginia is around 86% of its 2000 level; in Puerto Rico the same ratio is 79%.

Figure 16: Comparison of prime working age population, 2000 to 2019 (indexed, 2000 = 100)



Note: Prime working age is defined as being between 25 and 55 years old.

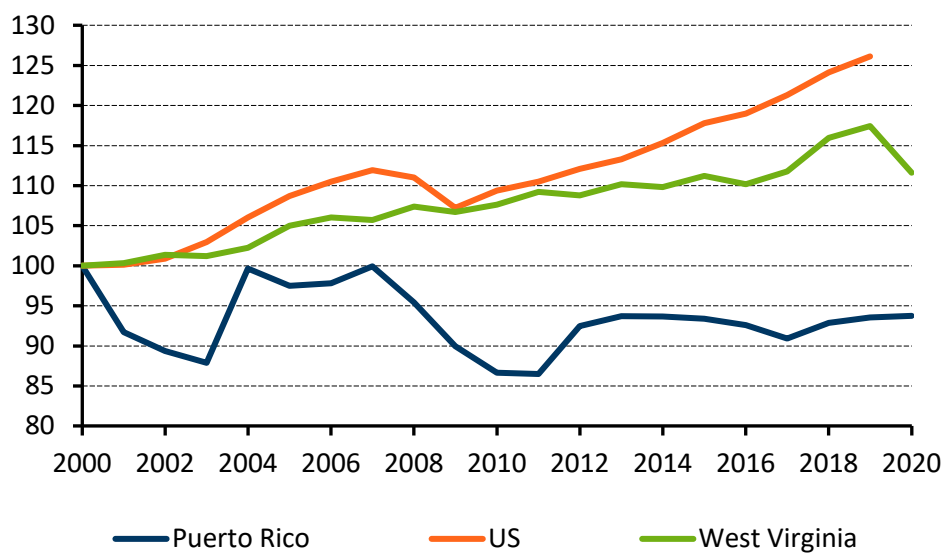
Source: U.S. Census Bureau. See Appendix 13 for additional details.

- 5.27 If cutting pensions further is attempted as a way to improve the pay-out to bondholders, it will prove to be a self-defeating mechanism. Austerity in the form of pension cuts will contract the economy and reduce potential tax revenue.
- 5.28 Expected recovery values are a function of promises to pay, multiplied by the probability that the payments can be made. If pensions are pressed down sufficiently far – i.e., below what has been agreed by the Retiree Committee – the result will be some combination of: political protest, social unrest, change of government, and even a potential future refusal to pay debts.

6. Prospects for Future Financial Market Access

- 6.1 What would happen to future financial market access if pensioners' incomes are cut further, in order to boost recoveries for bondholders?
- 6.2 Financial markets are, on the whole, forward looking. The risk premium on future debt issues - and the appetite for this debt overall - will depend on what potential lenders think is likely to happen.
- 6.3 Successful debt restructuring, even with a deep loss of value to bondholders, can result in renewed market access - because the overhang of unpayable debt is now removed. Once a legal agreement or settlement is reached with all existing bondholders, it is rational for future creditors to focus entirely on future revenues and the likelihood that they will be repaid.
- 6.4 In that context, further reducing pensions today can prove counterproductive because anything that undermines the local tax base will make it harder for the government to make future debt payments. In addition, if the local population is financially insecure - for example because their pensions are very low - this means they (and the local economy) are vulnerable to future shocks.
- 6.5 Any measures that make pensioners poorer and more insecure will increase the social, economic, and financial risks on the island. This is an ageing population, without deep private resources and living in precarious housing - far below standards acceptable in the 50 states. Government pensions are one of the few potential anchors for this local economy.
- 6.6 Alongside natural disasters and economic and population decline, Puerto Rico has seen political uncertainty. For example, in August 2019, Puerto Rico had three different governors in a week. This type of rapid, political change typically makes future government policy more unpredictable.
- 6.7 Further cuts to pensions today will increase the likely risk premium, as creditors will - quite reasonably - think that there is an increased probability of social disorder and further decline in the tax base. A higher risk premium means that either the government will need to pay more when it again issues debt in the market or that such debt issues will not be possible. Either way, more expensive (or denied) access to financial markets will undermine the prospects for sustained economic recovery.
- 6.8 Puerto Rico could still recover, despite the struggles of recent decades. The divergence in per capita income between Puerto Rico and the 50 states (or even one of the weakest states, West Virginia) has been dramatic; see Figure 17 below. With better policies and significantly reduced financial leverage, Puerto Rico could again experience convergence in incomes per capita. Further cuts to pensions today or in the near future only make an economic recovery in Puerto Rico less likely.

Figure 17: Comparison of real per capita incomes in U.S., Puerto Rico, and West Virginia, 2000 to 2020 (indexed, 2000 = 100)



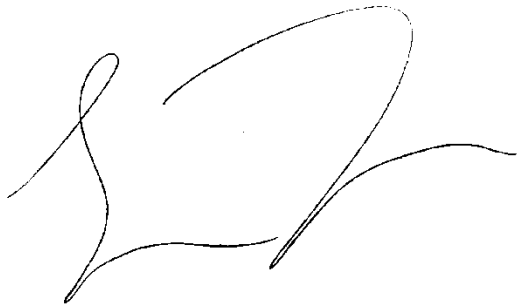
Source: see Figure 2 above.

7. Differential Treatment of Pensioners

- 7.1 One implication from the analysis above is that it is not unfair to treat pensioners differently from bondholders for five reasons.
- 7.2 First, spending by pensioners is a significant component of local demand in Puerto Rico. Cutting pensions will lead to more out-migration, both directly as people seek higher incomes elsewhere (or move to live with family members, because they can no longer survive on their own on the island) and because the healthcare system will decline further as its federal funding is tied to the number of people on the island. A decline in access to healthcare will further encourage other families to leave the island.
- 7.3 Second, as population falls, there will be a decline in the revenue base that supports health, education, and public safety. A long-term downward spiral, as experienced in some U.S. cities since 1950, is entirely feasible. Reducing pensions down to and below the poverty level makes this downward spiral more likely. The worst-case scenario is that Puerto Rico takes on some of the characteristics of long-term urban decline, in which only low-income and immobile people are left behind.
- 7.4 Third, if bondholders are paid ahead of pensioners and other critical government spending, then social infrastructure - health, education, and public safety - will decline quickly. The political backlash would likely be severe, leading to instability and, paradoxically, an unwillingness or inability on the part of the government to live up to such commitments to bondholders. This would be an unusual scenario for part of the U.S., but entirely consistent with experience in other parts of the world.
- 7.5 Fourth, in addition to the above considerations, Puerto Rico's adjustment process started well before PROMESA and actually led with cuts to pensions - even while bondholders continued to receive interest and principal payments in full. Consequently, many pensioners have already experienced large cuts in their actual and expected monthly payments.
- 7.6 Fifth, as current and potential government employees look at how pensioners have been treated already, this will discourage qualified people from entering government service. Limiting the likely supply of highly competent officials undermines the ability of the government to provide critical services, including in support of social infrastructure.

8. Conclusion

- 8.1 Puerto Rico is a relatively low-income part of the U.S. that has been hit hard by a series of shocks over the past two decades. As a result, there are high rates of poverty and out-migration.
- 8.2 In previous rounds of austerity, public sector pensions were already reduced significantly. The proposed cuts in pensions in the Plan of Adjustment will have a further depressive effect on the local macroeconomy. Any additional pension cuts could trigger further out-migration, primarily as pensioners move to be with family members who already live in the 50 states.
- 8.3 Further out-migration will undermine local tax revenues and worsen the prospects for private sector investment and employment on the island. This is exactly the kind of excessive austerity that often proves counterproductive. Puerto Rico pensioners have already experienced multiple rounds of cuts in the real value of the payments they can expect to receive. Pressing more of them down closer to the poverty level is likely to trigger negative macroeconomic consequences, making an economic recovery harder to sustain - and in turn making it harder for the Commonwealth to meet its restructured commitments to bondholders.



Professor Simon Johnson

13 September 2021

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Sloan School of Management, MIT
100 Main Street, E62-420
Cambridge, MA 02142-1347

Appendix 1

Full biography and professional resume

Biography

- 1.1 Simon Johnson is the Ronald A. Kurtz (1954) Professor of Entrepreneurship at the MIT Sloan School of Management, where he is head of the Global Economics and Management group. From 2007 to 2008, he was chief economist at the International Monetary Fund. In February 2021, Johnson joined the board of directors of Fannie Mae.
- 1.2 During the 2020 COVID pandemic, he helped build teams in support of nursing homes, childcare, K12 schools, low-income senior housing, and towns in Massachusetts, with a focus on designing, building, and scaling low-cost virus testing systems. Most of this work was organized through COVID Response Advisors.
- 1.3 Johnson's most recent book, with Jon Gruber, *"Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream"*, explains how to create millions of good new jobs around the U.S., through renewed public investment in research and development. This proposal has attracted bipartisan support.
- 1.4 Johnson was previously a senior fellow at the Peterson Institute for International Economics in Washington, D.C., a cofounder of BaselineScenario.com, and a member of the Federal Deposit Insurance Corporation's Systemic Resolution Advisory Committee. From July 2014 to 2017, Johnson was a member of the Financial Research Advisory Committee of the U.S. Treasury's Office of Financial Research, within which he chaired the Global Vulnerabilities Working Group.
- 1.5 *"The Quiet Coup"* received over a million views when it appeared in The Atlantic in early 2009. His book *"13 Bankers: the Wall Street Takeover and the Next Financial Meltdown"* (with James Kwak), was an immediate bestseller and has become one of the most highly regarded books on the financial crisis. Their follow-up book on U.S. fiscal policy, *"White House Burning: The Founding Fathers, Our National Debt, and Why It Matters for You"*, won praise across the political spectrum. Johnson's academic research on economic development, corporate finance, political economy, and public health is widely cited.
- 1.6 *"For his articulate and outspoken support for public policies to end too-big-to-fail"*, Johnson was named a Main Street Hero by the Independent Community Bankers of America in 2013.

Professional resume

Current and recent positions

- Ronald A. Kurtz (1954) Professor of Entrepreneurship, Sloan School of Management, MIT, from 2004. Head of Global Economics and Management group. Member of the faculty at MIT Sloan since 1997.
- Board of Directors, Fannie Mae, from February 2021.
- Co-chair, Systemic Risk Council, from August 2021. Member since creation in 2012.
- Research Associate, National Bureau for Economic Research, from 2004.
- Monthly columnist, Project Syndicate, from 2010.
- Weekly columnist, Economix, NYT.com, 2009-2014.
- Regular columnist, Bloomberg and Bloomberg View, 2010-2013.

Other recent experience

- Economic Counsellor (chief economist) and Director, Research Department, International Monetary Fund, 2007-2008.
- Co-founder, COVID Response Advisors, 2020-2021.
- Senior Fellow, Peterson Institute for International Economics, from 2008 (on leave).
- Member, Systemic Resolution Advisory Committee, Federal Deposit Insurance Corporation, 2011-2016.
- Member, Financial Research Advisory Committee, Office of Financial Research, U.S. Treasury, 2014-2016.
- Member, Panel of Economic Advisers, Congressional Budget Office, 2009-2015.
- Advisory Board Member, Institute for New Economic Thinking (INET), 2010-2018.
- Advisory Board Member, Intelligence Squared (public debate forum), 2017-2020.
- Growth Commission on Puerto Rico, organized by the Center for a New Economy, 2017-2019.
- Co-founder, <http://BaselineScenario.com>, 2008-2015.
- Co-director, NBER Africa project, 2009-2014.
- President, Association for Comparative Economic Studies, 2008-2009.
- Assistant Director, Research Department, International Monetary Fund, 2004-2006.
- Advisory Council, NBER Africa Project, 2007-2008. Co-founder, 2006.

- Visiting Fellow, Peterson Institute for International Economics, Washington DC, 2006-2007.
- Co-Chair, Taskforce on Latin American Reforms, Center for Global Development, 2005-2006.
- Non-resident scholar, Asian Institute of Corporate Governance, Korea University, Seoul, 2001-2003.
- International Advisory Board, CASE, Warsaw, from 2002.
- Advisory Committee on Market Information, Securities and Exchange Commission, 2000-01.

Education

- Massachusetts Institute of Technology, Ph.D. (Economics), 1989.
- University of Manchester (England), M.A. (Economics) with Distinction, 1986.
- University of Oxford (England), B.A. (Economics and Politics), First Class Honours, 1984.

Previous primary academic appointments

- Ronald A. Kurtz Associate Professor, Sloan School of Management, MIT, 2001-2004; with tenure from 2002.
- Michael M. Koerner '49 Career Development Associate Professor of Entrepreneurship, Sloan School of Management, MIT, 1997-2001.
- Associate Professor, Fuqua School of Business, Duke University, July 1995-June 1997.
- Director, Fuqua School of Business Center for Manager Development in St. Petersburg, Russia, January 1993-December 1995.
- Assistant Professor, Fuqua School of Business, Duke University, September 1991-June 1995.
- Junior Scholar, Harvard Academy for International and Area Studies, and Fellow, Russian Research Center, Harvard University, 1989-1991.

Other academic positions

- Member of Editorial Board, COVID Economics (CEPR online publication), from September 2020.
- BREAD Senior Fellow, from 2007.
- Member of Centre for Economic Policy Research, Development Economics group, 2006-2017; digital currency group, 2018-
- Consultant, Research Department, IMF, 2006-2007.
- Program co-organizer, NBER workshop on growth in Africa, April 2006. Lead organizer, NBER proposal for Africa working group, 2006-2007 and 2008-.
- Associate Editor, Journal of Financial Economics, 2004-2011
- Associate Editor, The Review of Economics and Statistics, 2003-2008.
- Editorial Board, Journal of Comparative Economics, January 2007-2010.
- Editorial Board, Cliometrica, 2007-2010.
- Research Associate, NBER, 2005- (Faculty Research Fellow from 2000-2005), corporate finance, and international finance and macroeconomics groups.
- Affiliate, BREAD (Bureau for Research in Economic Analysis of Development)
- Research Fellow, CEPR (Institutions and Economic Performance)
- Program co-chair, NBER conference on the economic crisis in Indonesia, September 2000.
- Team Leader, Russian European Center for Economic Policy (RECEP), Moscow, 1997-1999.
- Research Associate, Center for Economic Performance, London School of Economics, 1996-1998.
- Visiting Scholar, Sloan School of Management, MIT, July 1996-December 1996. (Visiting Associate Professor, Sloan School of Management, MIT, January 1997-June 1997.)
- Davidson Institute Research Fellow, The William Davidson Institute at the University of Michigan Business School, 1997-present.
- Research Fellow, Osteconomiska Institutet, Stockholm School of Economics, 1995-96.
- Visiting Professor, Central European University, Prague, August 1995.
- Research Associate, Institute for Economic Analysis, Moscow, June 1994-January 1995.

- Visiting Scholar, Osteconomiska Institutet, Stockholm School of Economics, September-December 1994.
- Visiting Professor, INSEAD (Institut Européen d'Administration) and the Euro-Asia Center, Fontainebleau, France. Taught MBA students June 1992 and executives in 1993-98.

Other activities

- Co-Founder, Immune Observatory (501c3), June 2020-January 2021.
- Co-founder, COVID-19 Policy Alliance, March 2020-June 2021.
- External Examiner/Assessor, PhD thesis, LSE, 2005; London Business School, 1999; CERGE (Charles University), 1999.
- Adviser, Analysis Group-Economics, 2000-2002; and Brattle Group, 1999-2002.
- Senior Associate, Cambridge Energy Research Associates, 1998-99.
- Editor, quarterly edition of Russian Economic Trends, 1997-98.
- Consultant, Salomon Brothers International, 1997-98.
- Consultant, The World Bank, UNDP, various dates.
- Senior Adviser to the Minister of Economics in Ukraine, August-December 1994.
- Consultant, in association with three Harvard University projects, to reform groups in the Soviet Union, June 1990-August 1999; to the Senior Vice President of the National Bank of Poland, January-April 1990.

Publications authored in last ten years

Journal articles

- “*Population and Conflict*,” with Daron Acemoglu and Leopoldo Fergusson. *Review of Economics Studies*, Volume 87, Issue 4, July 2020, pages 1565-1604.
- “*Transitioning Out of the Coronavirus Lockdown: A Framework for Evaluating Zone-Based Social Distancing*,” with Eric Friedman, John Friedman, and Adam Landsberg, *Frontiers of Public Health*, June 8, 2020.
- “*The Value of Political Connections in Turbulent Times*,” with Daron Acemoglu, Amir Kermani, James Kwak, and Todd Mitton. *Journal of Financial Economics*, Volume 121, Issue 2, August 2016, pages 231-448.
- “*Disease and Development: A Reply to Bloom, Canning, and Fink*,” with Daron Acemoglu. *Journal of Political Economy*, December 2014, volume 122, number 6, pages 1367-1375.
- “*Ending ‘Too Big To Fail’: Government Promises Versus Investor Perceptions*,” with Todd Gormley and Changyong Rhee. *Review of Finance*, April 2014.
- “*Forty Years of Leverage: What Have We Learned about Sovereign Debt?*” with Peter Boone. *American Economic Review*, Volume 104, Issue 5, papers and proceedings, May 2014, pages 266-271.
- “*Is Newer Better? Penn World Tables Revisions and Their Impact on Growth Estimates*,” with William Larson, Chris Papageorgiou, and Arvind Subramanian. *Journal of Monetary Economics*, Volume 60, Issue 2, March 2013, pages 255–274.
- “*Hither Thou Shall Come But No Further: ‘Reply to The Colonial Origins of Comparative Development: An Empirical Investigation; Comment’*,”. *American Economic Review*, October 2012.
- “*The Consequences of Radical Reform: The French Revolution*,” with Daron Acemoglu, Davide Cantoni, and James Robinson. *American Economic Review*, Volume 101, Issue 7, December 2011, pages 3286–3307.

Books

- *Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream*, with Jonathan Gruber, PublicAffairs, April 2019.
- *African Successes: Government and Institutions, Volume I*, co-editor with Sebastian Edwards, and David N. Weil, University of Chicago Press (for the NBER), 2016.
- *African Successes: Human Capital, Volume II*, co-editor with Sebastian Edwards, and David N. Weil, University of Chicago Press (for the NBER), 2016.
- *African Successes: Modernization and Development, Volume III*, co-editor with Sebastian Edwards, and David N. Weil, University of Chicago Press (for the NBER), 2016.
- *African Successes: Sustainable Growth, Volume IV*, co-editor with Sebastian Edwards, and David N. Weil, University of Chicago Press (for the NBER), 2016.
- *White House Burning: The Founding Fathers, The National Debt, and Why It Matters To You*, with James Kwak, Pantheon Books, New York, April 2012. Wall Street Journal Business Bestseller. Paperback edition published in 2013.

Other publications

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- Time to Relax Global Travel Restrictions, Project Syndicate, July 31, 2021
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- Taking the Fight to the Pandemic, Project Syndicate, May 31, 2021
- Infrastructure for the Next American Century, Project Syndicate, April 29, 2021
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- Vaccination Is Not Enough, Project Syndicate, February 2, 2021
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Appendix 2

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26.	Global Health Data Exchange website
27.	Other publicly available resources and databases as identified in this report and the appendices thereto

Appendix 3

Key events in Puerto Rico history

Timeline of key events

A3.1 Table A3-1 below sets out key events that have occurred in Puerto Rico in recent history in chronological order.

Table A3-1: Timeline of key events in Puerto Rico

Event	Date	Brief description of event
Beginning of phaseout of section 936 tax breaks	1996	President Clinton signs legislation that phases out section 936, ³⁸ which granted U.S. corporations a tax exemption from income originating from U.S. territories, over a ten-year period. ³⁹
Last cost of living adjustment (“COLA”)	2007	Employees Retirement System (“ERS”) and Teachers’ Retirement System (“TRS”) retirees have received no COLAs since 2007. Judiciary Retirement System (“JRS”) retirees are not affected. ⁴⁰
Act 3-2013	April 4, 2013	Act 3-2013 signed into law. This act included the following effects on ERS members: (i) freezing their Defined Benefit (“DB”) pension accruals; (ii) transitioning them to a hybrid “cash balance” plan; (iii) increasing their retirement age; and (iv) eliminating bonus payments for those not yet retired. ⁴¹

³⁸ As a Tax Break Closes, Some See Dire Consequences, Hemlock, The New York Times, September 21, 1996.

³⁹ The Puerto Rican Economic Activity Tax Credit: Current Proposals and Scheduled Phaseout, Brumbaugh, Congressional Research Service, October 4, 2000.

⁴⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 13.

⁴¹ Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12, 13, 44 and 45.

Act 160-2013	December 24, 2013	Enactment of Act 160-2013. Through this Act, the Commonwealth sought to freeze retirement benefits for TRS participants, and to introduce a Defined Contribution (“ DC ”) plan to replace the DB plan for TRS participants. ⁴²
Puerto Rico defaults on a debt payment for the first time	May 2, 2016	Puerto Rico defaults on a \$442 million debt repayment, paying only \$23 million of the amount. ⁴³
The Puerto Rico Oversight, Management, and Economic Stability Act (“ PROMESA ”) is passed	June 30, 2016	President Obama signs PROMESA into law. The bill establishes the Financial Oversight and Management Board (“ FOMB ”) to ensure Puerto Rico’s fiscal responsibility and access to capital markets. PROMESA also establishes a Congressional Task Force on Economic Growth in Puerto Rico. ⁴⁴
Default on general obligation bonds announced	July 1, 2016	Puerto Rico defaults on approximately \$800 million worth of bonds, marking the first time that a state or state-like entity has failed to pay general obligation bonds since the Great Depression. ⁴⁵
Autoridad de Asesoría Financiera y Agencia Fiscal ⁴⁶ (“ AAFAF ”) releases its first Fiscal Plan	October 14, 2016	Publication of the first AAFAF Fiscal Plan for Puerto Rico. AAFAF goes on to release several more Fiscal Plans in the coming years. ⁴⁷

⁴² Report on the Puerto Rico Retirement Systems, EY, September 2019, page 46.

⁴³ As Puerto Rico Defaults, Eyes Turn to Washington, Walsh, The New York Times, May 2, 2016.

⁴⁴ 114th Congress Public Law 187, U.S. Government, June 30, 2016.

⁴⁵ Puerto Rico makes historic default, Long, CNN, July 1, 2016.

⁴⁶ The English translation of ‘Autoridad de Asesoría Financiera y Agencia Fiscal’ is the ‘Puerto Rico Fiscal Agency and Financial Advisory Authority’.

⁴⁷ 2016 Fiscal Plan, AAFAF, October 14, 2016.

The first FOMB certified Fiscal Plan is released	March 13, 2017	Publication of the first Fiscal Plan for Puerto Rico certified by the FOMB on March 13, 2017. Multiple further FOMB Fiscal Plans are published in the coming years. ⁴⁸
Act 106	August 10, 2017 ⁴⁹	Act 106 transitioned Puerto Rico's pension system to PayGo, and created DC pension schemes for various active ERS workers and new ERS hires. ⁵⁰
Hurricane Irma	September 6, 2017	Category 5 Hurricane Irma passes near Puerto Rico and leaves more than one million people without power. ⁵¹
Hurricane Maria	September 20, 2017	Category 4 Hurricane Maria makes landfall on Puerto Rico's southeast coast. Hurricane Maria causes approximately \$90 billion in damage to Puerto Rico and the U.S. Virgin Islands, and destroys most of Puerto Rico's electricity, water, and telecommunications infrastructure. ⁵²
Protest over austerity measures	May 1, 2018	Thousands of demonstrators gather in a general strike to oppose school closings, university tuition increases, and potential cuts to pensions and other benefits. ⁵³
Retirees reach a tentative agreement with the FOMB on pensions	June 12, 2019	The Retiree Committee reaches an agreement with the FOMB on future pension cuts. The agreement limits pension cuts to 8.5%, and those with a monthly pension below \$1,200 face no pension cuts. ⁵⁴

⁴⁸ 2017 Fiscal Plan, FOMB, March 13, 2017.

⁴⁹ Puerto Rico governor signs pension reform law, Bradford, Pensions & Investments, August 25, 2017.

⁵⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 46.

⁵¹ Hurricane Irma Skirts Puerto Rico, Leaves 1 Million Without Power, Johnson, Arkin, Cumming & Karins, NBC, September 7, 2017.

⁵² Hurricane Maria's devastation of Puerto Rico, Scott, National Oceanic and Atmospheric Administration, July 25, 2018.

⁵³ Protest in Puerto Rico Over Austerity Measures Ends in Tear Gas, Mazzei, The New York Times, May 1, 2018.

⁵⁴ The Retiree Committee reaches tentative agreement with the FOMB that will significantly limit pension cuts, Official Committee of Retirees, June 12, 2019.

Initial Plan of Adjustment	September 27, 2019	FOMB files initial proposed Plan of Adjustment, with a blended recovery rate for creditors of 35 - 42%. Further Plans of Adjustment have been released since this initial publication. ⁵⁵
6.4 and 5.9 magnitude earthquakes	January 7-11, 2020	A 6.4 magnitude earthquake strikes Puerto Rico on 7 January, followed by a 5.9 magnitude earthquake on January 11. ⁵⁶
Declaration of Covid-19 emergency	15 March 2020	Governor Wanda Vázquez declares a state of emergency and activates National Guard amid the threat of Covid-19 pandemic on March 12. ⁵⁷ Curfew imposed on March 15 with all non-essential businesses to close. ⁵⁸ Lockdown is extended on 30 March. ⁵⁹ These restrictions are periodically relaxed and tightened from March 2020 onwards.
5.4 magnitude earthquake	May 2, 2020	A 5.4 magnitude earthquake strikes Puerto Rico. ⁶⁰
Tropical Storm Isaias	July 30, 2020	Tropical Storm Isaias passes Puerto Rico, bringing flooding and landslides. ⁶¹
Aid package to rectify Hurricane Maria's damage	September 18, 2020	Federal government releases a \$12.8 billion aid package to Puerto Rico in relation to damage from Hurricane Maria. ⁶²

⁵⁵ Title III Joint Plan of Adjustment of The Commonwealth of Puerto Rico, et al., FOMB, September 27, 2019.

⁵⁶ Quake-stunned Puerto Rico hit by another 5.9-magnitude shock, Acevedo, NBC, January 11, 2020.

⁵⁷ Governor of Puerto Rico declares emergency, activates National Guard in response to coronavirus, Gresik, Military Times, March 12, 2020.

⁵⁸ Executive Order of the Governor of Puerto Rico, Hon. Wanda Vazquez-Garced, to Implement the Necessary Closure of Governmental and Private Sector Operations in order to Combat the Effects of Coronavirus (COVID-19) and to Control the Risk of Infection on our Island, Government of Puerto Rico, March 5, 2020.

⁵⁹ Puerto Rico: Governor extends lockdown and curfew; key deadlines and governmental measures in response to COVID-19, DLA Piper, April 6, 2020.

⁶⁰ 5.4-magnitude earthquake hits near Puerto Rico, Acevedo, NBC News, May 2, 2020.

⁶¹ Tropical Storm Isaias unleashes flooding, landslides in Puerto Rico, Los Angeles Times, July 30, 2020; and Tropical Storm Isaias – July 29-31, 2020, National Weather Service, accessed July 30, 2021.

⁶² White House announces nearly \$13 billion in aid for Puerto Rico three years after Hurricane Maria, Lambert, Reuters, September 18, 2020.

FOMB releases latest Plan of Adjustment	May 11, 2021	The FOMB files the latest debt restructuring plan. The plan limits pension cuts so that those with a monthly pension below \$1,500 face no pension cuts. ⁶³
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Timeline of Plans of Adjustments and Fiscal Plans

A3.2 Table A3-2 below contains a full list of the publication of Plans of Adjustments and Fiscal Plans in chronological order.

Table A3-2: Timeline of Plans of Adjustments and Fiscal Plans

Event	Date	Brief description of event
2016 Fiscal Plan	October 14, 2016	Publication of AAFAF's Fiscal Plan for Puerto Rico of 2016. ⁶⁴
2017 Fiscal Plan	March 13, 2017	Publication of Fiscal Plan for Puerto Rico as certified by FOMB. ⁶⁵
Several fiscal plans submitted	December 20, 2017 to March 23, 2018	AAFAF submits several iterations of a fiscal plan, each rejected by the FOMB. ⁶⁶
AAFAF April 2018 Fiscal Plan	April 5, 2018	AAFAF submits another Fiscal Plan, which the FOMB rejects. ⁶⁷
FOMB April 2018 Fiscal Plan	April 19, 2018	FOMB approves its own Revised Fiscal Plan. ⁶⁸
May 2018 Fiscal Plan	May 30, 2018	Publication of Revised Fiscal Plan for Puerto Rico as certified by the FOMB. ⁶⁹
June 2018 Fiscal Plan	June 29, 2018	Publication of New Fiscal Plan for Puerto Rico as certified by the FOMB. ⁷⁰

⁶³ Disclosure Statement for the Third Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., FOMB, May 11, 2021, page 49.

⁶⁴ 2016 Fiscal Plan, AAFAF, October 14, 2016.

⁶⁵ 2017 Fiscal Plan, FOMB, March 13, 2017.

⁶⁶ Puerto Rico's Fiscal Decline and Recovery Effort: A Timeline [\[link\]](#); and 2018 Fiscal Plan, AAFAF, March 23, 2018.

⁶⁷ Puerto Rico's Fiscal Decline and Recovery Effort: A Timeline [\[link\]](#).

⁶⁸ 2018 Draft Fiscal Plan, FOMB, April 2018.

⁶⁹ 2018 Fiscal Plan, FOMB, May 30, 2018.

⁷⁰ 2018 Fiscal Plan, FOMB, June 29, 2018.

August 2018 Fiscal Plan	August 20, 2018	AAFAF submits a Fiscal Plan. ⁷¹
September 2018 Fiscal Plan	September 7, 2018	AAFAF submits a Fiscal Plan. ⁷²
October 2018 Fiscal Plan	October 23, 2018	Publication of New Fiscal Plan for Puerto Rico as certified by FOMB. ⁷³
AAFAF March 2019 Fiscal Plan	March 10, 2019	AAFAF submits a Revised Fiscal Plan. ⁷⁴
AAFAF Second March 2019 Fiscal Plan	March 27, 2019	AAFAF submits a Revised Fiscal Plan. ⁷⁵
2019 Fiscal Plan	May 9, 2019	Publication of FOMB's 2019 Fiscal Plan for Puerto Rico. ⁷⁶
Title III Joint Plan of Adjustment of Puerto Rico	September 27, 2019	FOMB files the initial Plan of Adjustment, with a blended recovery rate for creditors of 35-42%. ⁷⁷
Amended Title III Joint Plan of Adjustment of Puerto Rico	February 28, 2020	FOMB files an amended version of the Plan of Adjustment, with a blended recovery rate for creditors of 41.3%. ⁷⁸
May 2020 Fiscal Plan	May 3, 2020	Release of AAFAF's 2020 Fiscal Plan for the Commonwealth of Puerto Rico.
May 2020 Fiscal Plan	May 27, 2020	Release of the 2020 Fiscal Plan for the Commonwealth of Puerto Rico as certified by the FOMB. ⁷⁹

⁷¹ 2018 Revised Fiscal Plan, AAFAF, August 20, 2018.

⁷² 2018 Revised Fiscal Plan, AAFAF, September 7, 2018.

⁷³ 2018 Fiscal Plan, FOMB, October 23, 2018.

⁷⁴ 2019 Fiscal Plan, AAFAF, March 10, 2019.

⁷⁵ 2019 Fiscal Plan, AAFAF, March 27, 2019.

⁷⁶ 2019 Fiscal Plan, FOMB, May 9, 2019.

⁷⁷ Title III Joint Plan of Adjustment of The Commonwealth of Puerto Rico, et al., FOMB, September 27, 2019.

⁷⁸ Amended Title III Joint Plan of Adjustment of The Commonwealth of Puerto Rico, et al., FOMB, February 28, 2020; and Commonwealth of Puerto Rico Title III Case: Plan Support Agreement, FOMB, February 9, 2020, page 9.

⁷⁹ 2020 Fiscal Plan, FOMB, May 27, 2020.

Proposed Second Amended Plan of Adjustment	August 18, 2020	The FOMB files a proposed Second Amended Plan of Adjustment in light of Covid-19 and the May 2020 Fiscal Plan. ⁸⁰
Creditors' counterproposal to the Second Amended Plan of Adjustment	August 24, 2020	Puerto Rican creditors release a counterproposal to the proposed Second Amended Plan of Adjustment. ⁸¹
Proposed Second Amended Plan of Adjustment	October 30, 2020	Another proposed amended Plan of Adjustment is announced, which would increase the threshold for pension cuts from \$1,200/month to \$1,500/month. The blended recovery rate for creditors under this plan is 31.3%-34.1%. ⁸²
Second Amended Title III Joint Plan of Adjustment of Puerto Rico	March 8, 2021	The FOMB files the Second Amended Plan of Adjustment. ⁸³
2021 Fiscal Plan	April 23, 2021	Release of the 2021 Fiscal Plan for the Commonwealth of Puerto Rico as certified by the FOMB. ⁸⁴
Third Amended Title III Joint Plan of Adjustment of Puerto Rico	May 11, 2021	The FOMB files the Third Amended Plan of Adjustment. ⁸⁵

⁸⁰ Fiscal Plan Macroeconomic Overview and Revised Plan of Adjustment Proposal, FOMB, August 18, 2020.

⁸¹ August 24 PSA Creditors Proposal, PSA Creditors, August 24, 2020.

⁸² Public Board Meeting – Plan of Adjustment Discussion, FOMB, October 30, 2020.

⁸³ Second Amended Title III Joint Plan of Adjustment of The Commonwealth of Puerto Rico, et al., FOMB, March 8, 2021.

⁸⁴ 2021 Fiscal Plan, FOMB, April 23, 2021.

⁸⁵ Disclosure Statement for the Third Amended Title III Joint Plan of Adjustment of The Commonwealth of Puerto Rico, et al., FOMB, May 11, 2021.

Fourth Amended Title III Joint Plan of Adjustment of Puerto Rico	June 29, 2021	The FOMB files the Fourth Amended Plan of Adjustment. ⁸⁶
Fifth Amended Title III Joint Plan of Adjustment of Puerto Rico	July 12, 2021	The FOMB to file the Fifth Amended Plan of Adjustment. ⁸⁷
Sixth Amended Title III Joint Plan of Adjustment of Puerto Rico	July 27, 2021	The FOMB to file the Sixth Amended Plan of Adjustment. ⁸⁸
Seventh Amended Title III Joint Plan of Adjustment of Puerto Rico	July 30, 2021	The FOMB to file the Seventh Amended Plan of Adjustment. ⁸⁹

⁸⁶ Notice of filing of Fifth Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., and Corresponding Disclosure Statement and Executive Summary of Changes Thereto, FOMB, July 12, 2021, pages 1 and 2 [\[link\]](#).

⁸⁷ Notice of filing of Fifth Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., and Corresponding Disclosure Statement and Executive Summary of Changes Thereto, FOMB, July 12, 2021 [\[link\]](#).

⁸⁸ Oversight Board Files 6th Amended Plan of Adjustment, Vega, Caribbean Business, July 27, 2021 [\[link\]](#).

⁸⁹ Notice of filing of Seventh Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., and Corresponding Disclosure Statement, FOMB, July 27, 2021 [\[link\]](#).

Appendix 4

Overview of Puerto Rico's recent economic history

Key laws affecting Puerto Rico's economic development

- A4.1 Since the early 1900s, U.S. federal and Puerto Rican legislation has greatly influenced Puerto Rico's economic development.
- A4.2 In 1917, The Jones-Shafroth Act granted U.S. citizenship to all Puerto Ricans who did not explicitly refuse it.⁹⁰ As a result approximately 42,000 Puerto Ricans (3% of the population at the time) migrated to the mainland within a decade.
- A4.3 A key element of the Jones-Shafroth Act was that it provided a triple tax exemption for Puerto Rican bonds. This made lending to Puerto Rico more attractive and therefore decreased Puerto Rico's cost of raising finance, making borrowing more attractive as well.⁹¹
- A4.4 In 1920, the Merchant Marine Act was passed. This act requires that all goods shipped between U.S. ports (including Puerto Rico) be (1) carried in ships constructed primarily in the U.S.; (2) owned by U.S. citizens; and (3) crewed by U.S. citizens and permanent residents.⁹² This act decreased competition and increased transportation costs between Puerto Rico and the mainland states.
- A4.5 In 1921, the Revenue Act of 1921 was passed. Section 931 of this act provided corporate tax exemptions for all U.S. corporations with income derived in Puerto Rico. The combined impact of Puerto Rico's status as a U.S. territory, its relatively cheap labor force and Section 931 is credited with the growth in output per employee of nearly 5% p.a. between 1950 and the mid-1970s.⁹³
- A4.6 In 1947, the Industrial Incentive Act was signed. This act exempted manufacturing firms located in Puerto Rico from paying federal corporation tax on their profits.⁹⁴

⁹⁰ Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, page 5.

⁹¹ Meaning the bonds were free from Municipal, State and Federal tax. Source: Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, page 15.

⁹² Report on the competitiveness of Puerto Rico's economy, Federal Reserve Bank of New York, June 29, 2012, page 13.

⁹³ Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, page 3.

⁹⁴ Could austerity collapse the economy of Puerto Rico, Institute for International Economy Policy, September 2017, page 4.

- A4.7 In 1952, Puerto Rico transitioned from being a territory into being a Commonwealth. This loosened Puerto Rico's borrowing constraints.⁹⁵
- A4.8 In 1961, the Puerto Rico Federal Relations Act was amended to remove the federally imposed debt limits.⁹⁶ This resulted in municipalities being allowed to borrow between 5% and 10% of their assessed property value without having to include commonwealth debt in the calculation. It also, through a 15% ceiling on debt service as a percentage of tax revenues, allowed the commonwealth to increase borrowing if they increased tax rates.
- A4.9 In 1976, Section 936 was added to the Internal Revenue Code and replaced some of Puerto Rico's previous tax benefits. Whereas previous tax benefits provided outright corporation tax exemptions, Section 936 was set up such that dividends paid by subsidiaries located in Puerto Rico were tax deductible.⁹⁷ This shifted focus away from activities in which Puerto Rico had a comparative advantage and towards those with tax advantages, i.e., activities with a high added value. This contributed to the growth of wholly owned subsidiaries in Puerto Rico, but shifted the incentive from labor intensive industries to manufacturers in capital intensive industries.⁹⁸
- A4.10 From 1996, the U.S. Congress passed laws which started to phase out Section 936, until it was entirely phased out by 2006. This reduced Puerto Rico's competitiveness in the manufacturing sector significantly.⁹⁹

⁹⁵ Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, pages 10 and 11.

⁹⁶ Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, page 12.

⁹⁷ Tax policy helped create Puerto Rico's fiscal crisis, Tax Foundation, June 30, 2015.

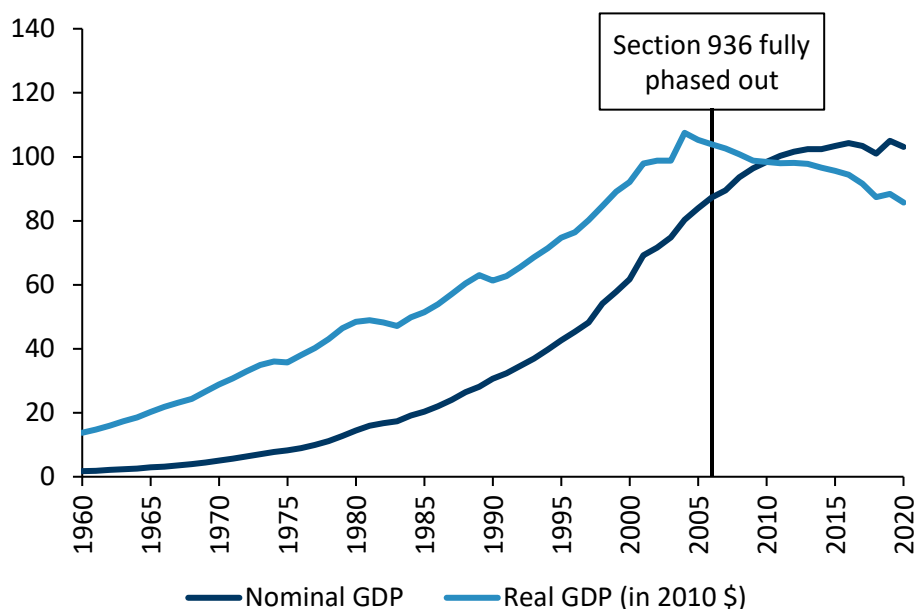
⁹⁸ Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, page 4.

⁹⁹ Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, pages 7 and 8.

Puerto Rico's economic growth

A4.11 In Figure A4-1 below, I show Puerto Rico's nominal and real Gross Domestic Product ("GDP") from 1960 to 2020. Puerto Rico's nominal GDP showed a largely upwards trajectory from 1960 to 2015. In real terms, however, Puerto Rico's GDP has been declining since 2004. The recession of 2001 accelerated the departure of manufacturers from the island, which began due to the repeal of Section 936. There has been a disproportionately high emigration¹⁰⁰ of professional and high-income earners since the mid-2000s, which has contributed to the decreasing GDP.¹⁰¹

Figure A4-1: Puerto Rico real and nominal GDP, 1960 to 2016 (\$ billions)



Note: Section 936 was fully phased out in January 2006.

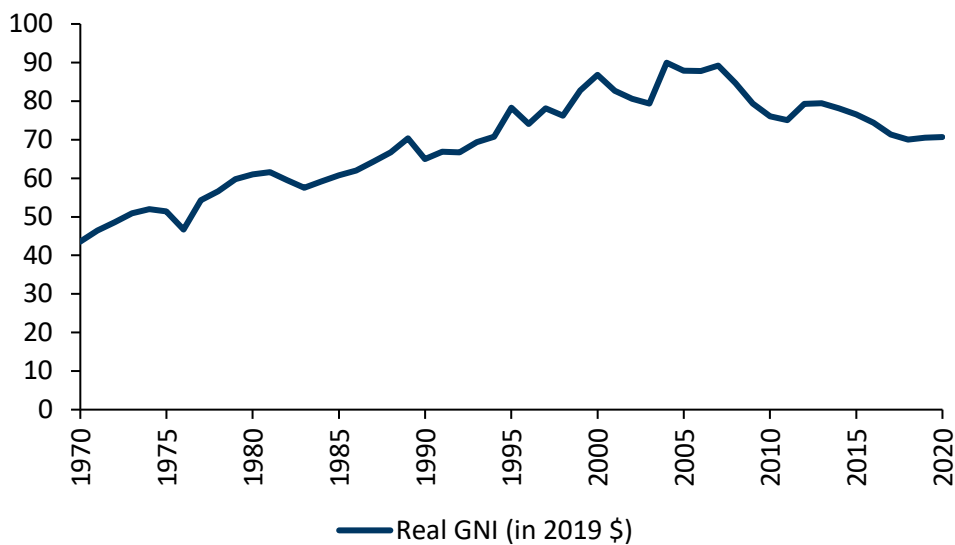
Sources: World Bank; U.S. Multinationals in Puerto Rico and the Repeal of Section 936 Tax Exemption for U.S. Corporations, Feliciano & Green, National Bureau of Economic Research, August 2017, page 1 [\[link\]](#). See Appendix 13 for additional details.

¹⁰⁰ By emigration, I mean "out-migration" out of Puerto Rico. This includes emigration to the U.S. mainland.

¹⁰¹ Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, page 13.

- A4.12 In Figure A4-2 below, I show Puerto Rico's real Gross National Income ("**GNI**") from 1960 to 2020. Puerto Rico's real GNI followed an upward trajectory until around 2004, with accelerated growth experienced between 1985 and 2005. Puerto Rico's GNI has followed a negative trend since 2004.

Figure A4-2: Puerto Rico real GNI, 1970 to 2020 (2019 \$ billions)



Note: Real GNI by adjusting nominal GNI by Puerto Rico's GDP deflator.

Sources: World Bank. See Appendix 13 for additional details.

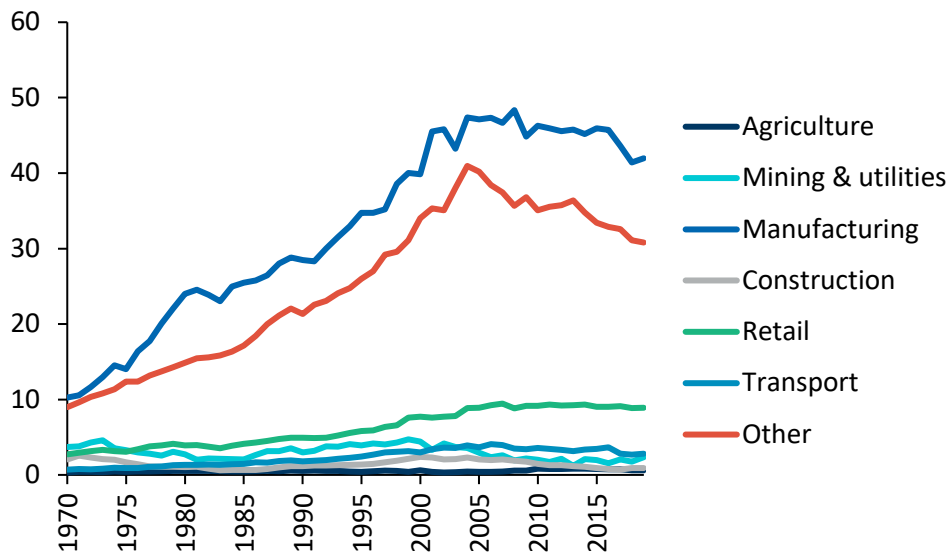
Economic output by sector

- A4.13 In Figure A4-3 below, I show the breakdown of real GDP by sector from 1970 to 2019. GDP of manufacturing and other activities grew strongly from 1970 to 2004. From 2004, manufacturing GDP stagnated and declined. The sharp rise in manufacturing from 1975 to 1980 coincided with the implementation of Section 936 to the Internal Revenue code in 1976, which attracted manufacturing through increased tax benefits.¹⁰² The decline in manufacturing from 2005 may be due to the phase out of Section 936 from 1996, which ended in 2006.¹⁰³

¹⁰² Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, page 4.

¹⁰³ Puerto Rico's Economy: A Brief History of Reforms from the 1980s to Today, The National Puerto Rican Chamber of Commerce, page 8.

Figure A4-3: Puerto Rico real GDP by sector, 1970 to 2019 (2010 \$ billions)



Notes: (1) To calculate real GDP by sector, the World Bank real GDP data is adjusted by the sector shares of gross value added (“GVA”), as reported by the UN; (2) GVA equals GDP plus subsidies and minus taxes, so GVA sectoral shares are a good proxy for GDP sectoral shares if subsidies and taxes do not vary proportionally by sector; and (3) ‘Other’ activities include “Financial intermediation, Real estate, renting and business activities, Public administration and defense, Education, Health and social work, Other community, social and personal service activities”.¹⁰⁴

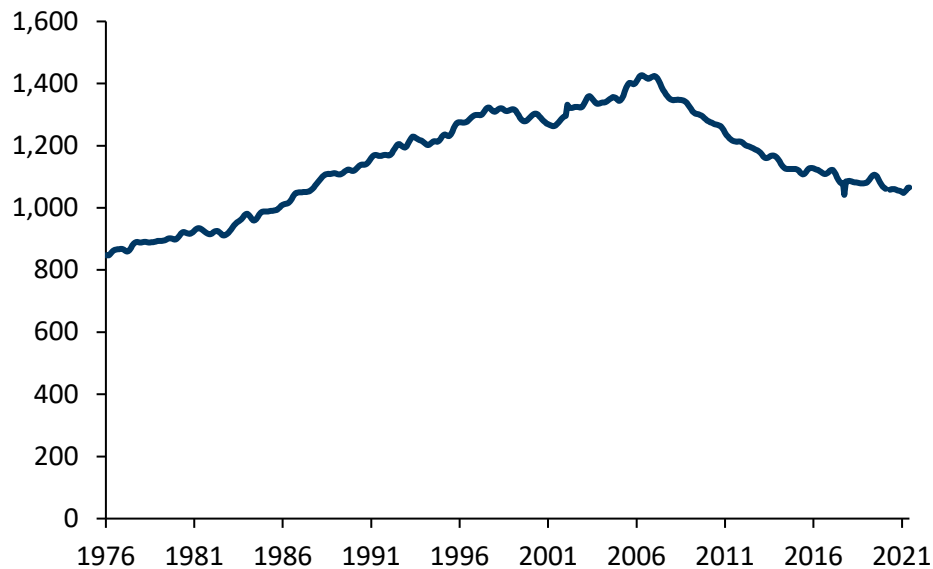
Sources: United Nations Statistics Division; World Bank. See Appendix 13 for additional details.

- A4.14 Wholesale, retail trade, restaurants and hotels GDP increased up until 2000, after which it stagnated and then declined. This is related to Puerto Rico’s weak tourism sector. In 2020, the direct contribution of travel and tourism to GDP was only 1.8%.¹⁰⁵
- A4.15 In Figure A4-4 below, I show how Puerto Rico’s labor force has evolved from 1976 to 2021. Puerto Rico’s labor force increased from 800 thousand in 1976 to 1.3 million in 1996. Puerto Rico’s labor force peaked at 1.4 million in 2006 and 2007. Puerto Rico’s labor force declined steadily since 2008, with a current labor force of around 1.1 million.

¹⁰⁴ National Accounts Statistics: Analysis of Main Aggregates, 2015, page 29 [\[link\]](#).

¹⁰⁵ 2021 Annual Research: Key Highlights, Puerto Rico, World Travel & Tourism Council, accessed September 6, 2021 [\[link\]](#).

Figure A4-4: Puerto Rico’s labor force, January 1976 to June 2021 (thousands)



Note: Where monthly data is not stated (e.g., in March and April of 2020), it has been interpolated from the surrounding available data points.

Source: Labor force (seasonally adjusted), Puerto Rico, Local Area Unemployment Statistics, U.S. Bureau of Labor Statistics, accessed August 2, 2021 [\[link\]](#). See Appendix 13 for additional details.

Government finances

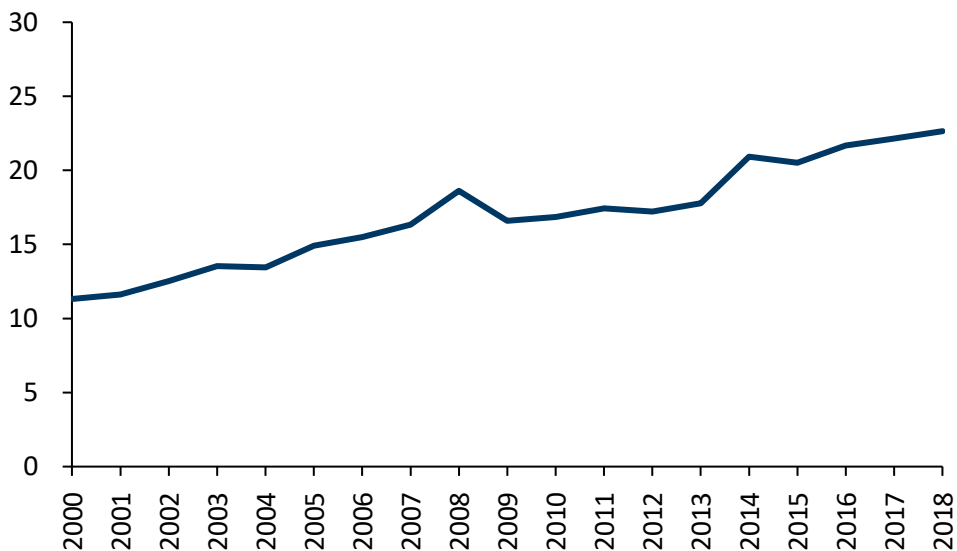
Revenue

- A4.16 Puerto Rico’s nominal government revenues have increased steadily between FY2000 and FY2018.¹⁰⁶ The nominal compound annual growth rate (“CAGR”) for total government revenues between FY2000 and FY2018 is 3.9%.¹⁰⁷ This increase in government revenues is shown in Figure A4-5 below.

¹⁰⁶ The government of Puerto Rico’s fiscal year ends on June 30, and the most recently published accounts for the Commonwealth of Puerto Rico relate to FY2018.

¹⁰⁷ $((\$22.6 \text{ billion} / \$11.3 \text{ billion}) ^ {1 / (2018 - 2000)}) - 1 = 3.9\%$. See Appendix 13 for further details.

Figure A4-5: Puerto Rico's nominal government revenues, FY2000 to FY2018 (\$ billions)



Note: The government of Puerto Rico's fiscal year ends on June 30.

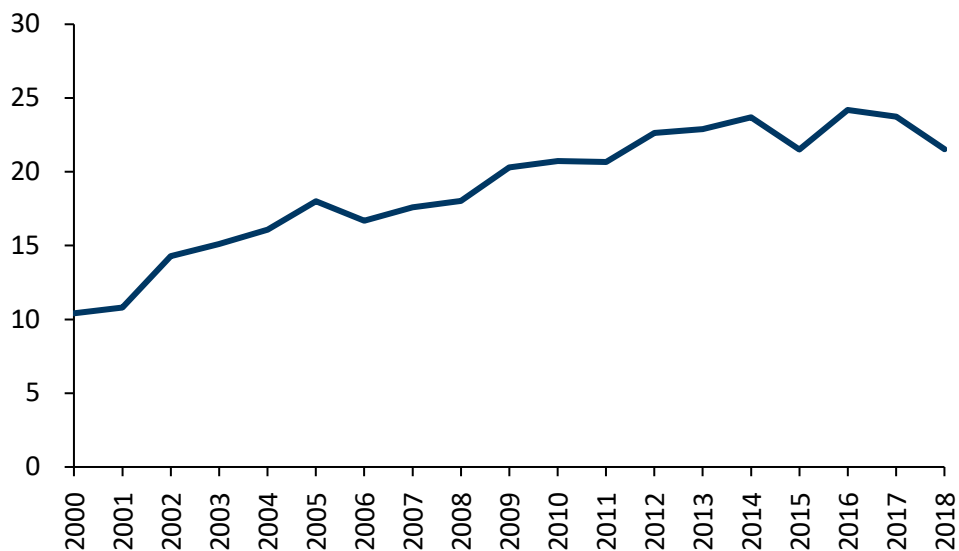
Source: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico, Statements of Activities.

Expenses

- A4.17 Puerto Rico's government expenses have also increased between FY2000 and FY2018. The CAGR for Puerto Rico's total nominal government expenses is 4.1% between FY2000 and FY2018.¹⁰⁸ This is shown in Figure A4-6 below.

¹⁰⁸ $((\$21.5 \text{ billion} / \$10.4 \text{ billion}) ^ {1 / (2018 - 2000)}) - 1 = 4.1\%$. See Appendix 13 for further details.

Figure A4-6: Puerto Rico's nominal government expenditure, FY2000 to FY2018 (\$ billions)



Note: The Government of Puerto Rico's fiscal year ends on June 30.

Source: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico, Statements of Activities.

A4.18 Total expenses fell in both FY2017 and FY2018 for the following reasons:¹⁰⁹

- (1) decreases in Puerto Rico's pension expenses related to changes in the net pension liability;
- (2) reductions in payroll and payroll-related expenses;
- (3) reductions in education expenses (e.g., reductions in school transportation services, teacher payroll savings, and no contracting to fill teacher vacancies);
- (4) reductions in special appropriations; and
- (5) eliminations of certain subsidies to both programs and to component units.

¹⁰⁹ Financial Statements, FY2018, the Commonwealth of Puerto Rico, page 16; and Financial Statements, FY2017, the Commonwealth of Puerto Rico, page 16.

Net deficit

- A4.19 The Puerto Rican government has incurred an annual nominal \$2.3 billion net deficit between 2002 and 2018 on average. This is displayed in Table A4-1 below.

Table A4-1: Puerto Rico's annual nominal government net deficit, FY2002 to FY2018 (\$ billions)

Fiscal year	Revenue	Expenses	Net surplus / (deficit)
2002	12.5	14.3	(1.7)
2003	13.5	15.1	(1.6)
2004	13.5	16.1	(2.6)
2005	14.9	18.0	(3.1)
2006	15.5	16.7	(1.2)
2007	16.3	17.6	(1.3)
2008	18.6	18.0	0.6
2009	16.6	20.3	(3.7)
2010	16.9	20.7	(3.9)
2011	17.4	20.7	(3.2)
2012	17.2	22.6	(5.4)
2013	17.8	22.9	(5.1)
2014	20.9	23.7	(2.8)
2015	20.5	21.5	(1.0)
2016	21.7	24.2	(2.5)
2017	22.2	23.7	(1.6)
2018	22.6	21.5	1.1
Average	17.6	19.9	(2.3)

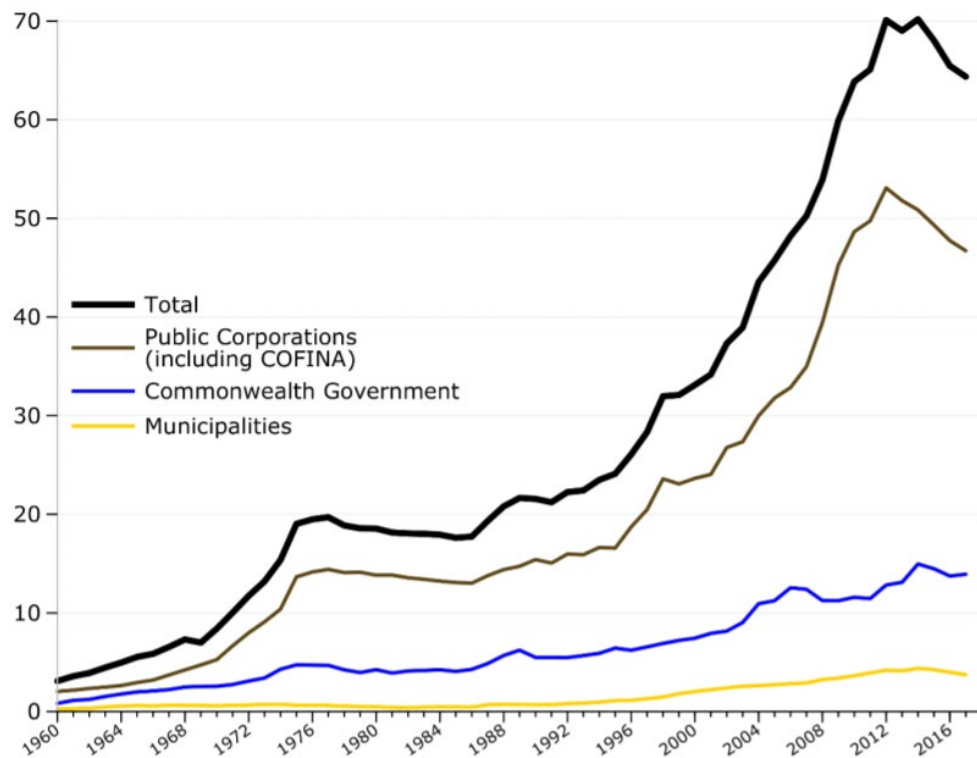
Note: The Government of Puerto Rico's fiscal year ends on June 30.

Source: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico, Statements of Activities.

Puerto Rico's debt

- A4.20 Puerto Rico's debt consists of debt issued by the Commonwealth, municipalities, and certain public corporations. Figure A4-7 below shows Puerto Rico's debt from 1960 to 2017 on a real basis. The real level of debt increased strongly until 1975. This was partly driven by the increase in the limit of bonded indebtedness from 7% to 10% in 1950 and the 1961 amendment which further relaxed the limits of debt. Puerto Rico's debt stayed broadly constant from 1975 to 1996. From 1996, the year the phase-out of Section 936 started, to 2012, Puerto Rico's debt increased strongly. Since 2015, total real debt has decreased slightly.

Figure A4-7: Puerto Rico's real public debt, 1930 to 2015 (2017 \$ billions)



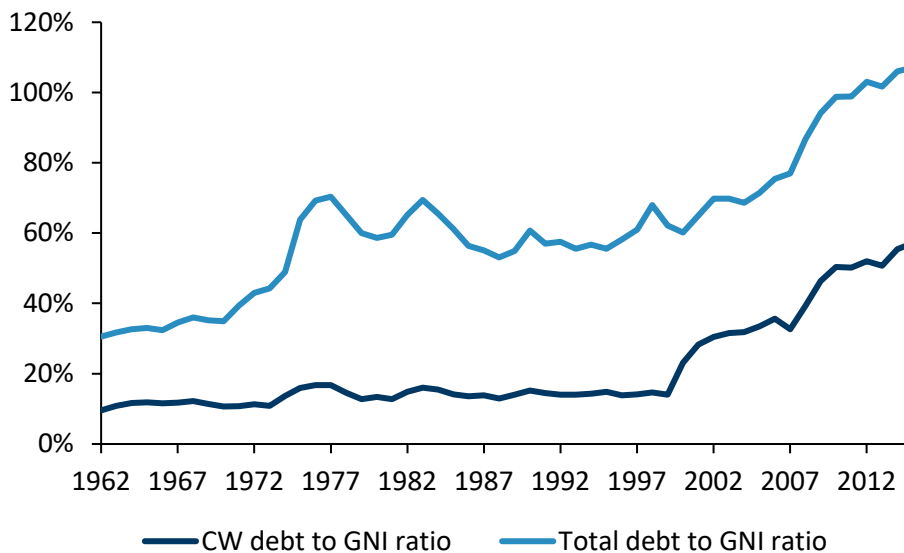
Source: *Puerto Rico's Public Debts: Accumulation and Restructuring*, Congressional Research Service, May 18, 2021, page 4 [\[link\]](#).

- A4.21 Figure A4-12 shows Puerto Rico's CW and total debt to GNI ratios. Puerto Rico's CW debt compared to its GNI was relatively stable from 1962 to 1999 - varying between 9.2% and 16.7% over this period. However, from 2000 to 2015, Puerto Rico's CW debt to GNI ratio increased strongly, from 23.1% to 57.1%.¹¹⁰
- A4.22 Puerto Rico's total debt to GNI ratio has also increased between 1962 and 2015. However, unlike Puerto Rico's CW debt to GNI ratio, it increased strongly in the early 1970s, peaking at 70.4% in 1977. The ratio fluctuated just under this level until 2000 - varying between 53.1% and 69.4% during this period. As with Puerto Rico's CW debt to GNI ratio, the total debt to GNI ratio also increased strongly between 2000 and 2015, moving from 60.2% to 107.1%.¹¹¹

¹¹⁰ Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, Appendix A, Table A1; and GDP (current US\$), World Bank, accessed August 2, 2021. See Appendix 13 for further details.

¹¹¹ Origins of the Puerto Rico fiscal crisis, Mercatus Research, April 2016, Appendix A, Table A1; and GDP (current US\$), World Bank, accessed August 2, 2021. See Appendix 13 for further details.

Figure A4-8: Puerto Rico's CW and total debt to GNI ratio, 1962 to 2015 (%)



Sources: (1) *Origins of the Puerto Rico fiscal crisis*, Mercatus Research, April 2016, Appendix A, Table A1; and (2) *GDP (current US\$)*, World Bank, accessed August 2, 2021.

- A4.23 As set out in Figure A4-7 above, Puerto Rico's debt consists of commonwealth debt, municipal debt and corporation debt. Two forms of Commonwealth debt are general obligation ("GO") and Corporación del Fondo de Interés Apremiante ("COFINA") bonds.¹¹² After a steady increase in Puerto Rico's debt to GNI ratio between 2000 and 2014 (as shown in Figure A4-8 above), GO bonds were downgraded to non-investment status in February 2014.¹¹³ On 30 June 2016, the U.S. President signed PROMESA and Puerto Rico authorized suspension of payments on its GO and COFINA debt.¹¹⁴
- A4.24 In total, \$22.7 billion is currently claimed by GO and Public Buildings Authority ("PBA") creditors under PROMESA. Table A4-2 presents a breakdown of these claims.

¹¹² COFINA bonds were issued by the Corporación del Fondo de Interés Apremiante (English translation: Puerto Rico Sales Tax Financing Corporation), and may use VAT on deposit in the Dedicated Sales Tax Fund to pay the Corporation's bonds (see 2015 Financial Statements, COFINA, page 12).

¹¹³ Fitch Downgrades Puerto Rico GO and Related Debt Ratings to 'BB'; Outlook Negative, Fitch Ratings, February 11, 2014 [\[link\]](#).

¹¹⁴ PROMESA bill summary, Public Law, June 30, 2016, Section 405 [\[link\]](#).

Table A4-2: Breakdown of the estimated claim amounts under PROMESA

Claim category	Claim type	Class(es)	Estimated claim amount (\$ billions)
PBA	Vintage	1 – 6	2.7
	2011	7 – 8	1.3
	2012	9 – 10	0.7
	Other	11 – 13	0.2
	Total	1 – 13	4.9
Vintage CW	Bond Claims	14 – 20	5.8
	Guarantee Bond Claims	21 – 26	2.0
	Total	14 – 26	7.9
2011 CW	Bond Claims	27 – 30	0.5
	Guarantee Bond Claims	31 – 32	1.0
	Other Bond Claims	33 – 36	0.6
	Total	27 – 36	2.2
2012 CW	Bond Claims	37 – 40	2.9
	Guarantee Bond Claims	41 – 42	0.5
	Total	37 – 42	3.5
2014 CW	Bond Claims	43 – 45	3.8
	Guarantee Bond Claims	46 – 47	0.3
	Total	43 – 47	4.2
Other	-	48 – 65	N/A
Total	-	1 – 47	22.7

Note: “CW” in the table above refers to the Commonwealth.

Source: Disclosure Statement for the Third Amended Title III Joint Plan of Adjustment of the Commonwealth of Puerto Rico, et al., FOMB, May 11, 2021, pdf pages 19 to 23.

Pension funds

- A4.25 Puerto Rico's total pension net position has deteriorated from FY2008 onwards, and its total pension funded ratio has fallen steadily from at least FY2000 onwards.¹¹⁵ All of Puerto Rico's retirement systems (ERS, TRS, and JRS) have underfunded pension plans, due to:¹¹⁶
- (1) inadequate employer contribution levels;
 - (2) the enactment of laws which have granted new pension benefits without adequate funding;
 - (3) early retirement programs;
 - (4) increases in Puerto Rican life expectancy;
 - (5) the ERS issuing debt that it could not service; and
 - (6) excessive loans made to participants in each retirement system.
- A4.26 As early as 2007, the actuaries who authored ERS's 2007 valuation report stated that the statutory contribution requirements for the ERS pension plan were insufficient to make future benefit payments.¹¹⁷
- A4.27 As the funded ratios of Puerto Rico's pension plans deteriorated, Puerto Rico passed various laws to improve the funded ratios of these plans. For example, in 2013, Act 32 increased employer contributions to each retirement system to keep them solvent. However, these additional employer contributions were inadequate, and the funded ratios of the plans continued to decline.¹¹⁸ This can be seen in Figures A4-9 to A4-12 below.

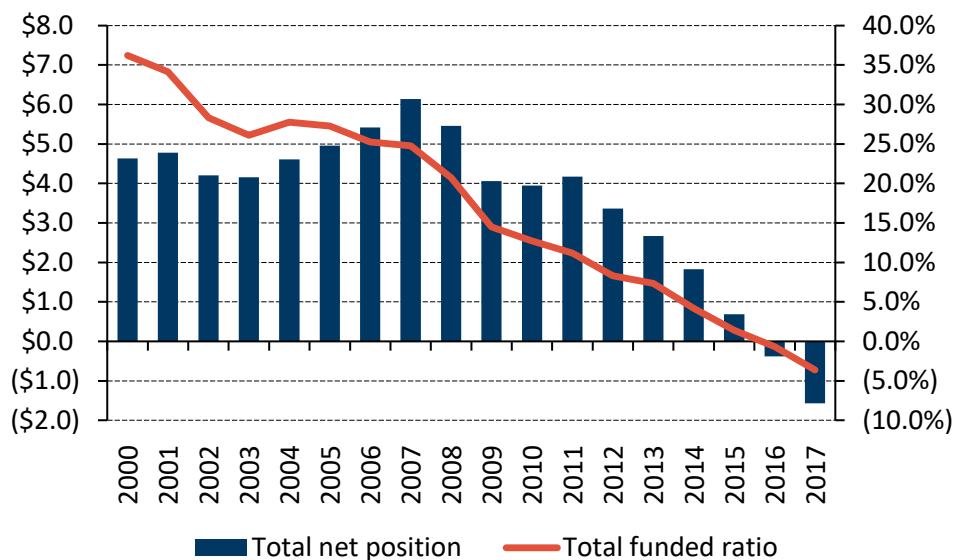
¹¹⁵ The funded ratio is the net position of a pension fund divided by the net pension liabilities of that pension fund (source: Pensions: funding ratio, De Nederlandsche Bank, accessed August 13, 2021 [\[link\]](#)).

¹¹⁶ Report on the Puerto Rico Retirement Systems, EY, September 2019, page iv.

¹¹⁷ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 17.

¹¹⁸ Report on the Puerto Rico Retirement Systems, EY, September 2019, pages ix and 4.

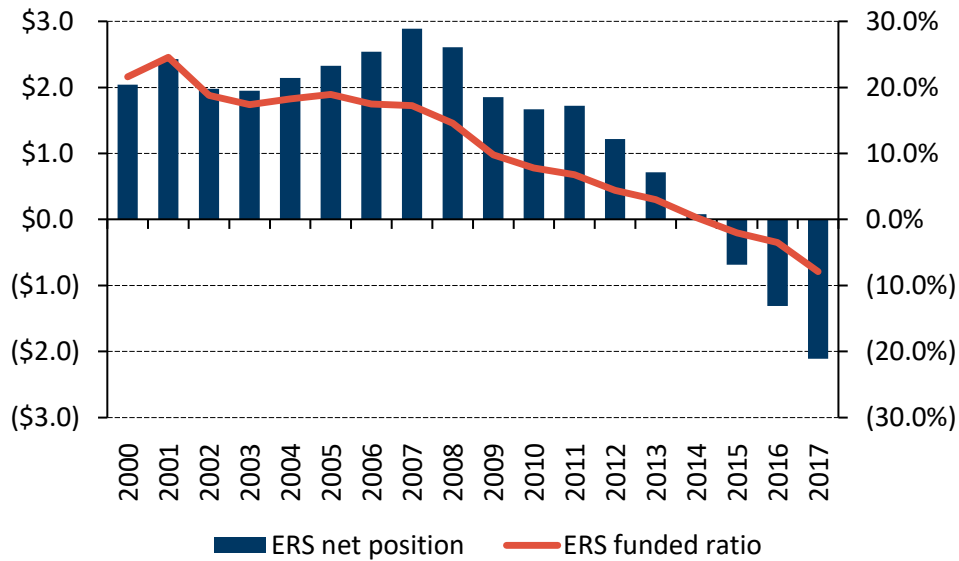
Figure A4-9: Total nominal Puerto Rican net pension position and funded ratio, FY2000 to FY2017 (\$ millions)



Notes: (1) Total net position is calculated by summing the net positions of the ERS, TRS, and JRS retirement systems; and (2) the total funded ratio is calculated by dividing the total net position by the sum of the ERS, TRS, and JRS net pension liabilities.

Sources: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico.

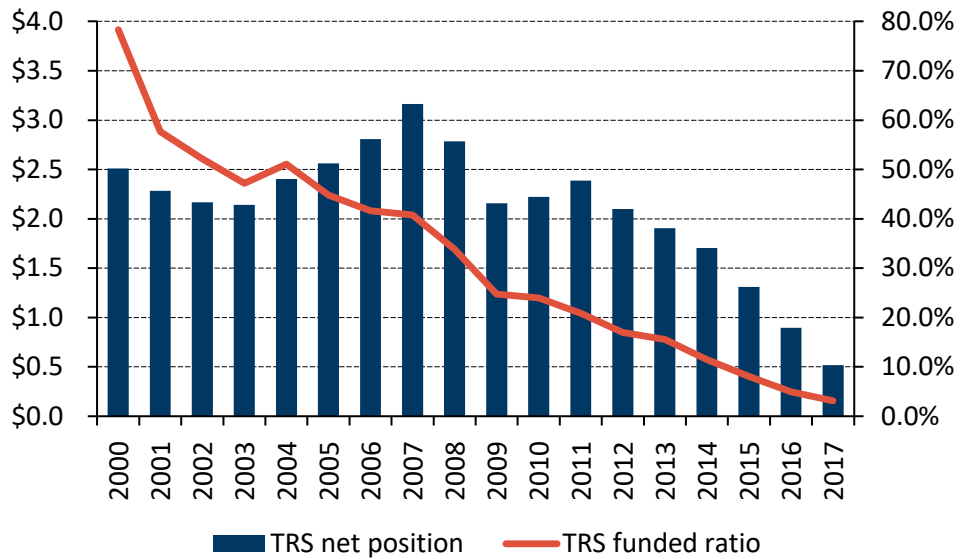
Figure A4-10: Nominal ERS net pension position and funded ratio, FY2000 to FY2017 (\$ millions)



Note: ERS net pension liabilities are not stated for FY2002, FY2004, FY2006, and FY2008 in Puerto Rico's accounts, so the values for these years have been interpolated from existing data points when calculating the funded ratio.

Sources: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico.

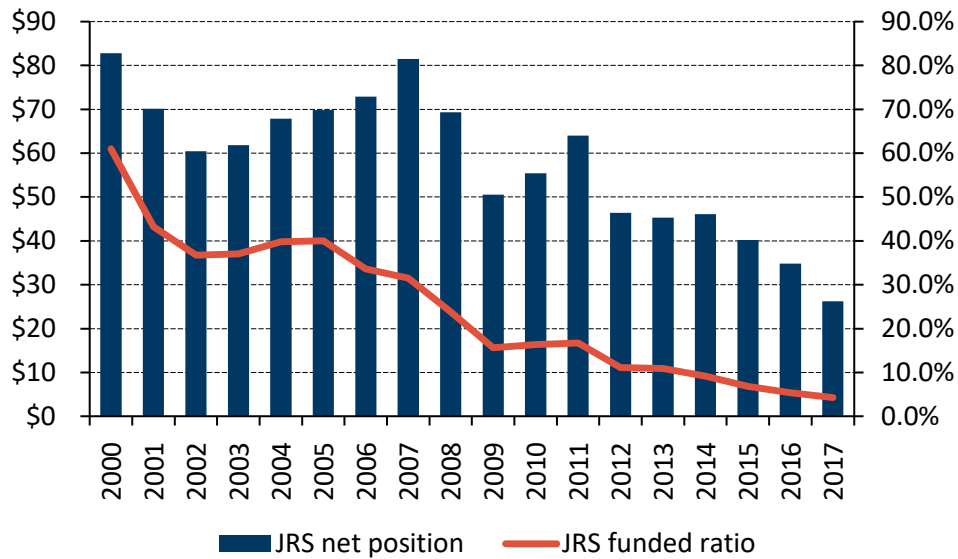
Figure A4-11: Nominal TRS net pension position and funded ratio, FY2000 to FY2017 (\$ millions)



Note: TRS net pension liabilities are not stated for FY2005, FY2006, and FY2008 in Puerto Rico's accounts, so the values for these years have been interpolated from existing data points when calculating the funded ratio.

Sources: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico.

Figure A4-12: Nominal JRS net pension position and funded ratio, FY2000 to FY2017 (\$ thousands)



Note: JRS net pension liabilities are not stated for FY2002, FY2004, FY2006, and FY2008 in Puerto Rico's accounts, so the values for these years have been interpolated from existing data points when calculating the funded ratio.

Sources: Financial Statements, 2000 to 2018, the Commonwealth of Puerto Rico.

Appendix 5

Historical and proposed pension cuts

Overview of Puerto Rico's public retirement systems

- A5.1 The Puerto Rican government operates three public employee retirement systems in Puerto Rico:
- (1) the Government Employees Retirement System ("ERS");
 - (2) the Teachers' Retirement System ("TRS"); and
 - (3) the Judiciary Retirement System ("JRS").
- A5.2 Of these systems, ERS is the largest both in terms of the number of individuals covered and the amount of benefits paid. The membership of the three public retirement systems as of 2016 (in the case of ERS and TRS) and as of 2015 (in the case of JRS) is set out in Table A5-1 below. I note that this is the most recent information that I have access to on the membership of the retirement systems (published in a report on the Puerto Rican retirement systems prepared by Ernst & Young, "EY").

Table A5-1: Membership of Puerto Rico's retirement systems as of July 1, 2016 for ERS and TRS, and July 1, 2015 for JRS

	ERS	TRS	JRS	Total
Active members	118,657	32,952	364	151,973
Pensioners and beneficiaries	122,757	43,305	514	166,576
Terminated vested members	Unknown	1,100	39	-
Average age of pensioners	71	70	73	-
Average monthly benefit	\$995	\$1,428	\$4,495	-
Median monthly benefit	\$651	\$1,435	\$5,409	-

Source: Report on the Puerto Rico Retirement Systems, EY, September 2019, page 2.

The evolution of the three systems

- A5.3 ERS was established by Act 447 of 1951. Under this Act, ERS established a Defined Benefit (“**DB**”) plan with the following benefits:¹¹⁹
- (1) Accrual of benefits: 1.5% of average compensation multiplied by years of credited service up to 20 years; plus 2% of average compensation in excess of 20 years.
 - (2) Maximum benefit of 75% of average compensation for 30 years of service and 55 years of age (merit pension).
 - (3) Average compensation: 36 highest months of compensation.
 - (4) Disability pension: non-occupational (same accrual as above) and occupational disability (50% of salary).
 - (5) Post retirement death benefit: for spouse or with dependent children at the time of death, the lifetime annual income to a widow or widower is equal to 60% if the retiree was not covered under Title 11 of the Social Security Act, or 50% if the retiree was covered at the time of death, payable for life for a surviving spouse and/or disabled children and payable until age 18 for non-disabled children.
 - (6) Prior to Act 116-2011, employer contributions were set at 9.275% and employee contributions were set at 8.275%. Act 3-2013 increased the employee contribution to 10%. Act 116-2011 enacted a gradual increase in ERS employer contributions, from 9.275% to 20.5% by FY2020.¹²⁰
- A5.4 Act 1 of 1990 amended Act 447 and created a new structure of benefits for employees hired after April 1, 1990, but kept intact the benefits of active participants prior to the date of effectiveness of April 1, 1990. The new benefit structure included:¹²¹
- (1) Accrual of benefits: 1.5% of average compensation multiplied by years of creditable service.
 - (2) Average compensation: the 5 highest years of compensation (with an anti-spiking provision).
 - (3) Age of retirement: 65 years. Act 1 also included an early retirement provision at age 55 with 25 years of creditable service but the benefit was actuarially reduced.
 - (4) Disability pension: non-occupational (same accrual as above) and occupational disability (40% of salary).

¹¹⁹ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, page 2 and 3.

¹²⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 46.

¹²¹ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, pages 4 and 5.

- (5) Post retirement death benefit: for spouse or with dependent children at the time of death, the lifetime annual income to a widow or widower is equal to 60% of the Retirement Benefit at the time of death, payable for life for a surviving spouse and/or disabled children and payable until age 18 (age 25 if pursuing studies) for non-disabled children.
- A5.5 Act 305 of 1999 introduced the Retirement Savings Account Program (“**System 2000**”), funded by participating employees’ contributions and administered by ERS for all participants hired on or after January 1, 2000.¹²² These mandatory employee contributions were paid into “*hybrid*”, or notional retirement accounts, which were credited with notional interest earned,¹²³ and upon retirement the notional balances would be converted into a lifetime annuity.¹²⁴
- A5.6 When System 2000 was established, the employer contributions called for by prior laws, such as Act 447 and Act 1 in ERS, were continued based on the actual salary of the System 2000 participants, at the rate of 9.275%, but to be credited to the funds of the ERS to be used for increasing the corpus of the ERS pension fund or to directly pay pensions of retirees under Act 447 and Act 1.¹²⁵
- A5.7 The benefits include:¹²⁶
- (1) Retirement age is 60.
 - (2) Upon attainment of retirement age, the value of the Retirement Savings Account (“**RSA**”) shall be used to purchase an annuity contract.
 - (3) Disability pension: non-occupational (the value of the member’s RSA) and occupational disability (40% of salary).

¹²² Report on the Puerto Rico Retirement Systems, EY, September 2019, page 46.

¹²³ Prior to Act 3, members could select from multiple hypothetical investment options to determine the earnings on their hybrid account balances. After Act 3, interest for all ERS hybrid account balances was changed to be based on 80% of the rate of return on the overall ERS pension trust. (Report on the Puerto Rico Retirement Systems, EY, September 2019, page 34).

¹²⁴ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 9.

¹²⁵ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, page 6.

¹²⁶ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, page 6.

A5.8 Special laws:¹²⁷

- (1) COLAs to Pension Benefits: The legislature, from time to time, increased pensions by 3% for retired and disabled members. The first increase was granted by Act 10 of 1992 and the last 3% increase was effective July 1, 2007.
- (2) Medical Insurance Plan Contribution: A payment of up to \$100 per month to the eligible medical insurance plan selected by the retiree or disabled member. This benefit is paid by the General Fund.
- (3) Christmas Bonus: Before 2013 the bonus was \$600 for each retiree, beneficiary, and disabled member. Act 3-2013 reduced the benefit to \$200 for then-current retirees and eliminated it for future retirees.
- (4) Summer Bonus: An annual bonus of \$100 for each retiree, beneficiary, and disabled member paid in July. This benefit is paid by the General Fund.
- (5) Medication Bonus: An annual bonus of \$100 for each retiree, beneficiary, and disabled member to cover health costs paid in July. This benefit is paid by the General Fund.

A5.9 As discussed, Act 116-2011 enacted a gradual increase in ERS employer contributions, from 9.275% to 20.5% by FY2020.¹²⁸ Act 106-2017 later eliminated the concept of employer contributions based on the payroll of active employees. Instead, all government agencies and public corporations are required to make a direct contribution to the Commonwealth General Fund to pay for the actual pensions of retirees of their government units.

¹²⁷ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, page 7. These special laws were approved equally for ERS, TRS and JRS.

¹²⁸ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 46.

The effect of Act 3 and Act 106 on ERS members

A5.10 In 2013 and 2017 the Government enacted two acts, Act 3 of 2013 and Act 106 of 2017, which impacted the benefits of ERS members. The effects, which vary according to the date that a given plan member was hired, are set out below.

Act 447 members

A5.11 The approximately 124,000 Act 447 members were hired prior to April 1, 1990.¹²⁹ The most significant effects of Act 3 on Act 447 members include the following:¹³⁰

- (1) the retirement age for people aged 57 or more as of 30 June 2013 increased to 59, for people aged 56 increased to 60 and for people aged 55 or less increased to 61;¹³¹
- (2) accrued benefits were frozen, and members transitioned to a cash balance plan¹³² similar to the structure for System 2000 members (to which only employees contributed), to be paid at retirement via a lifetime annuity;¹³³
- (3) because of the freeze, it was no longer possible for participants to obtain the enhanced merit pension.¹³⁴

A5.12 The most significant effect of Act 106 on Act 447 members was that the cash balance plan was frozen as of June 30, 2017, eliminating the notional interest payment, and members transitioned to a DC plan.¹³⁵

¹²⁹ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 44; and Segal pension data, September 8, 2021, slide 4.

¹³⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

¹³¹ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, page 11.

¹³² The difference between cash balance plans and DB plans is in the way the benefit is expressed - for DB plans it is expressed as a monthly pension payment whereas in the case of cash balance plans it is expressed as a notional account balance. The accounts earn a notional interest amount which cannot be withdrawn. Upon retirement, the notional balances (including accumulated interest) are converted into a lifetime annuity.

¹³³ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 9.

¹³⁴ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

¹³⁵ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12. Based on the latest April 23, 2021 FOMB Fiscal Plan, individual accounts for participants were funded and employees received access to view and manage their account balances in June 2020. (Source: 2021 Fiscal Plan, FOMB, April 23, 2021, page 279).

Act 1 members

- A5.13 The approximately 51,000 Act 1 members were hired on or after April 1, 1990 and before January 1, 2000.¹³⁶ The most significant effects of Act 3 on the Act 1 members include the following:¹³⁷
- (1) accrued benefits were frozen and members transitioned to a cash balance plan, paid at retirement via a lifetime annuity;
 - (2) the retirement age remained at 65, but the early retirement option from the age of 55 was eliminated;¹³⁸ and
 - (3) bonus payments were eliminated for those not yet retired by the effective date of Act 3.
- A5.14 The most significant effect of Act 106 on Act 1 members was that the cash balance plan was frozen as of June 30, 2017, eliminating the notional interest benefit, and members transitioned to a DC plan.¹³⁹

System 2000 members

- A5.15 The approximately 66,000 System 2000 members were hired on or after January 1, 2000.¹⁴⁰
- A5.16 Act 3 increased the retirement age from 60 to age 61 to 65, depending on the member's age as of June 30, 2013.¹⁴¹ Bonus payments were also eliminated for those not yet retired by the effective date of Act 3.¹⁴²
- A5.17 The most significant effect of Act 106 was that the cash balance plan was frozen as of June 30, 2017, eliminating the notional interest benefit, and members transitioned to a DC plan.¹⁴³

¹³⁶ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 45; and Segal pension data, September 8, 2021, slide 4.

¹³⁷ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

¹³⁸ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 45.

¹³⁹ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

¹⁴⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 45; and Segal pension data, September 8, 2021, slide 4.

¹⁴¹ Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 33 and 34.

¹⁴² Report on the Puerto Rico Retirement Systems, EY, September 2019, page 45.

¹⁴³ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

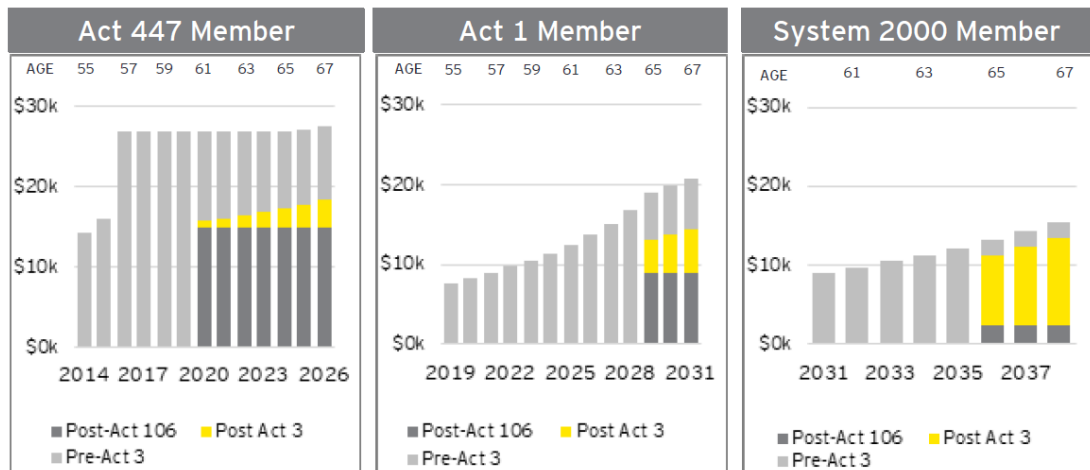
A5.18 Other effects of Act 3 were:¹⁴⁴

- (4) Employee contribution for ERS increased from 8.275% to 10%;¹⁴⁵
- (5) Elimination or modification of several benefits: lump sum withdrawal of employee contributions (restricted), active death benefit (eliminated), disability pension (eliminated and substituted with private insurance), etc.;
- (6) For participants who retired on or before 30 June 2013, Christmas bonus was reduced by \$400 (to \$200), Summer bonus was reduced by \$100;
- (7) For participants who retire(d) after 1 July 2013, loss of medical insurance contribution (\$100/month), loss of Christmas bonus (\$600), loss of Summer bonus (\$100), loss of Medical bonus (\$100).

The impact of Act 3 and Act 106 on average sample ERS members

A5.19 Figure A5-1 summarizes the effect of Act 3 and Act 106 on an average sample ERS member in each of the three cohorts.¹⁴⁶ These graphs are explained below.

Figure A5-1: Average ERS members' benefit reduction due to Act 3 and Act 106



Note: The bars in the figures above represent the annual retirement benefit for the sample ERS members based on the year in which they retire.

Source: Report on the Puerto Rico Retirement Systems, EY, September 2019, page 11.

¹⁴⁴ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, pages 12 and 13.

¹⁴⁵ Through Act 106 this was again reduced to 8.5%.

¹⁴⁶ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 11.

Sample average Act 447 member

- A5.20 The light grey bars in the first graphic of Figure A5-1 show that the sample average Act 447 member could have retired in 2014, at age 55, with an annual pension of approximately \$14,000, in 2015 with an annual pension of approximately \$16,000 and in 2016 with an annual pension of approximately \$27,000, thanks to the enhanced merit pension that was available to those with 30 years of service.
- A5.21 The yellow bars indicate that the sample average Act 447 member was affected by the reforms under Act 3 in the following ways:¹⁴⁷
- (1) the Act 3 freeze of pension accruals eliminated the ability of the sample participant to receive the enhanced merit pension that was available to those with 30 years of service (the yellow bars are significantly smaller than the light grey bars);
 - (2) early retirement at age 55 in 2014 was eliminated under Act 3 and the date the member could first receive a pension benefit was delayed until age 61 in 2020 (yellow bars start in 2020);
 - (3) survivorship benefits, disability pensions, certain bonus payments and medical contributions were eliminated by Act 3, reducing the annual pension benefit.
- A5.22 The dark grey bars indicate that the sample average Act 447 member was affected by the reforms under Act 106 by eliminating the accruals and interest on the notional cash balances (the increase in the yellow bars over time is eliminated).
- A5.23 The sample Act 447 member's age 61 annual pension benefit of \$26,830 was effectively reduced to \$15,561, i.e., by 42% because of the Act 3 freezes. Act 106 further reduced the annual benefit to \$14,829, for a cumulative reduction of 44%.¹⁴⁸

Sample average Act 1 member

- A5.24 The light grey bars in the second graphic of Figure A5-1 show that the sample average Act 1 member could have retired in 2019, at age 55, with an annual pension of approximately \$7,000. Had this member delayed retirement until 2029 they would have received an annual pension of approximately \$19,000.

¹⁴⁷ Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12 and 44.

¹⁴⁸ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

A5.25 The yellow bars indicate that the sample average Act 1 member was affected by the reforms under Act 3 in the following ways:¹⁴⁹

- (1) the option for early retirement from age 55 in 2019 was eliminated by Act 3, and so the member's retirement was delayed until the age of 65 in 2029 (yellow bars start in 2029);¹⁵⁰ and
- (2) survivorship benefits, disability pensions, certain bonus payments and medical contributions were eliminated by Act 3, reducing the annual pension benefit.

A5.26 The dark grey bars indicate that the sample average Act 1 member was affected by the reforms under Act 106 by eliminating the accruals and interest on the notional cash balances (the increase in the yellow bars over time is eliminated).

A5.27 The sample Act 1 member's age 65 annual pension benefit of \$18,898 was effectively reduced by 31% to \$13,040 because of the Act 3 freezes. Act 106 eliminated the accumulation of notional interest in the hybrid account, further reducing the annual benefit to \$8,868, for a cumulative reduction of 53%.¹⁵¹

Sample average System 2000 member

A5.28 Finally, the light grey bars in the third graphic of Figure A5-1 show that the sample average System 2000 member could have retired in 2031, at age 60, with an annual pension of approximately \$9,000. Had this member delayed retirement until 2036 they would have received an annual pension of approximately \$13,000.

A5.29 The yellow bars indicate that the sample average System 2000 member was affected by the reforms under Act 3 in the following ways:

- (1) the retirement age was increased from age 60 to 65, delaying retirement from 2031 to 2036;¹⁵² and
- (2) certain bonus payments and medical contributions were eliminated by Act 3, reducing the annual pension benefit.

A5.30 The dark grey bars indicate that the sample average System 2000 member was affected by the reforms under Act 106 by eliminating the accruals and interest on the notional cash balances (the increase in the yellow bars over time is eliminated).¹⁵³

¹⁴⁹ Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12 and 45.

¹⁵⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 45.

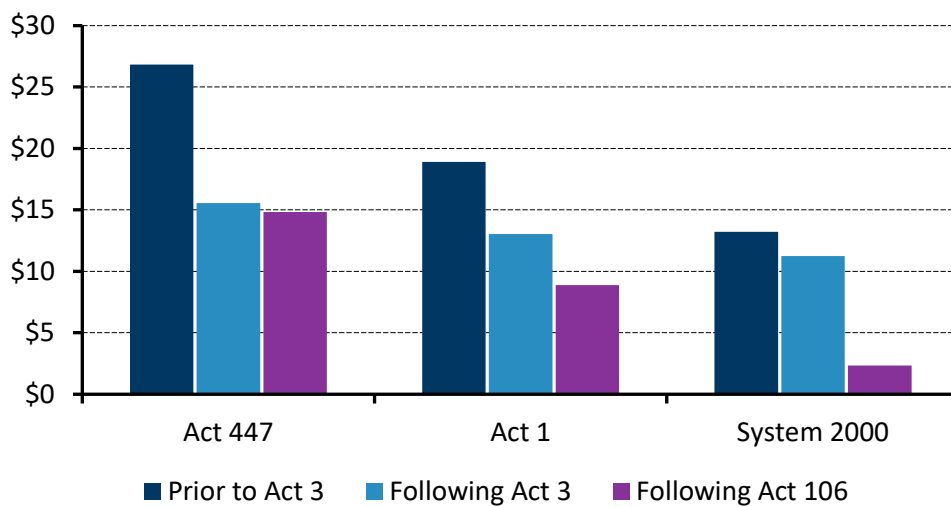
¹⁵¹ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 12.

¹⁵² Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12 and 33.

¹⁵³ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 13.

- A5.31 The sample System 2000 member's age 65 annual pension benefit of \$13,214 was effectively reduced by 15% to \$11,232 because of the Act 3 bonus elimination. The lack of accruals and interest in the notional accounts for a period of over 20 years following Act 106 reduced the annual benefit to \$2,322, for a cumulative reduction of 82%.¹⁵⁴

Figure A5-2: Sample ERS members' benefit before and after the implementation of Act 3 and Act 106 (\$ thousands)



Source: Report on the Puerto Rico Retirement Systems, EY, September 2019, pages 12 and 13. See Appendix 13 for additional details.

Teachers' Retirement System¹⁵⁵

- A5.32 The Teachers' Retirement System evolved since the late 1800s, through several laws and amendments. Act 218, enacted 6 May 1951, established the pension benefits that were later reformed in 2013.
- A5.33 The TRS system administers two benefit structures: (i) a contributory DB plan for active participants hired on or before July 31, 2014 and (ii) a contributory hybrid plan for participants hired on or after August 1, 2014. The latter structure was introduced through Act 160-2013.

¹⁵⁴ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 13. I understand that EY's analysis excludes post-Act 106 employee member contributions.

¹⁵⁵ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, pages 14 to 17.

A5.34 The DB structure has the following features:

- (1) Merit Pension: Average compensation is based on the highest 36 monthly salaries. The monthly benefit is limited to a minimum of \$400 per month and a maximum of 75% of the average compensation.
- (2) Age Retirement: A participating employee who terminates service with a minimum of 60 years of age, and a minimum of 10 years of creditable services. A 1.8% multiplier applies.
- (3) Retirement because of age and years of service: A participating employee with a minimum of 47 years of age, and a minimum of 25 years of creditable services. The monthly retirement income depends on the retirement age and years of creditable service.
- (4) Disability: occupational and non-occupational. The annuity is 1.8% of average compensation based on the highest 60 months or the number of months of creditable services.
- (5) Other: refunds, service purchases, service transfer and death benefits.
- (6) Prior to Act 114-2011, the employer contribution was 8.5% and the employee contribution 9%. Act 114-2011 mandated increasing employer contributions, culminating in 19.75% effective July 1, 2020. This was later amended and extended to 20.525% in contributions for July 1, 2021. The employee contribution is 9% for members hired before July 1, 2014 and 10% for members hired after that date.

A5.35 The DC structure has the following features:

- (1) Retirement Annuity: Members with 5 or more years of service and \$10,000 or more in contributions at the age of 62, qualify for an annuity of the percentage acquired by contributions based on an actuarial formula.
- (2) Disability Annuity: All members are eligible upon 5 years of creditable service and the occurrence of disability, whether work related or not. An annuity payable for the lifetime of the member equal to the annuitized value of the balance in their DC account at the time of disability.
- (3) Separation of Assets: The System segregated the DC plan from the DB plan. The assets from the DC plan cannot be used to pay benefits from the DB plan. The System opened a different bank account for the DC plan and will receive an asset allocation study.

Judiciary Retirement System¹⁵⁶

- A5.36 The Judiciary Retirement System (JRS) is a trust created by Act 12 of October 19, 1954 as amended and prior to December 2013. Act No. 162-2013 was enacted as a comprehensive reform of the JRS.
- A5.37 The Supreme Court of Puerto Rico held that Act 162-2013 was constitutional, if interpreted to apply prospectively and therefore not to affect active participants and retired judges (regarding the modification to post-employment benefits).¹⁵⁷
- A5.38 The Supreme Court ruling resulted in three structures of benefits:
- (1) The first is composed of judges who entered service before December 24, 2013, who were subject to no change on their pension benefits. Also, post-employment benefits were left intact for retired judges and future retirees of that structure of benefits.
 - (2) For judges appointed between December 24, 2013 and June 30, 2014, the DB plan continued to exist, but with a maximum pension of 60% of salary. Their employee contribution was increased from 8% to 10%.¹⁵⁸ All other existing benefits remained unchanged.
 - (3) Judges appointed on or after July 1, 2014, as to whom all provisions of Act 162-2013 apply. Hybrid benefit structure with a 1.5% multiplier with 5 years for average compensation and a parallel defined contribution with a 12% employee contribution. Benefits after 12 years of service and 65 years of age.

¹⁵⁶ Bennazar, García & Milián, C.S.P., Puerto Rico Pension Systems, pages 18 and 19.

¹⁵⁷ The reasoning of the Court was that the retirement benefits are included in the Constitution of Puerto Rico and that salaries and emoluments of judges cannot be modified (including post-employment benefits).

¹⁵⁸ Effective July 1, 2008, the employer contribution was increased from 20% to 30.34%.

A5.39 Other effects of the 2013 reforms:

- (1) Retirees and participants of the original structure of benefits: none.
- (2) Judges hired from December 24, 2013 or later:
 - (a) Christmas Bonus: loss of \$600.
 - (b) Summer Bonus: loss of \$100.
 - (c) Medical Bonus: loss of \$100.
 - (d) Act 162 does not eliminate the medical insurance contribution.
- (3) Act 162-2013 established an additional contribution by the Commonwealth to the JRS, commencing in fiscal year 2015, equal to the amount determined by the actuaries as necessary to prevent the projected value of the gross assets of the JRS from falling below \$20 million during any subsequent fiscal year. The Commonwealth, however, did not pay the contribution for fiscal years 2015 and 2016.

Cost of Living Adjustments

- A5.40 Between 1992 and 2007, retirees from the Government of Puerto Rico received periodic increases of 3% to their base pensions through COLAs. The first increase was granted in 1992 with subsequent 3% increases every third year.¹⁵⁹ Since 2007, most retirees have not received any increase in their benefits.¹⁶⁰
- A5.41 Based on actuarial assumptions and methodologies, a pensioner could be expected to live approximately 30 years after retirement. After the elimination of the COLAs, a pensioner who retired in 2007 had by 2019 effectively experienced a 19% reduction in purchasing power. By 2037 (30 years after retirement), retirees will have experienced a cumulative 39% reduction in purchasing power.¹⁶¹ The elimination of COLAs can therefore be seen as another reduction in pension benefits.

¹⁵⁹ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 7.

¹⁶⁰ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 13.

¹⁶¹ Report on the Puerto Rico Retirement Systems, EY, September 2019, page 13.

Proposed pension adjustments

A5.42 The FOMB has proposed the following pension reform initiatives:

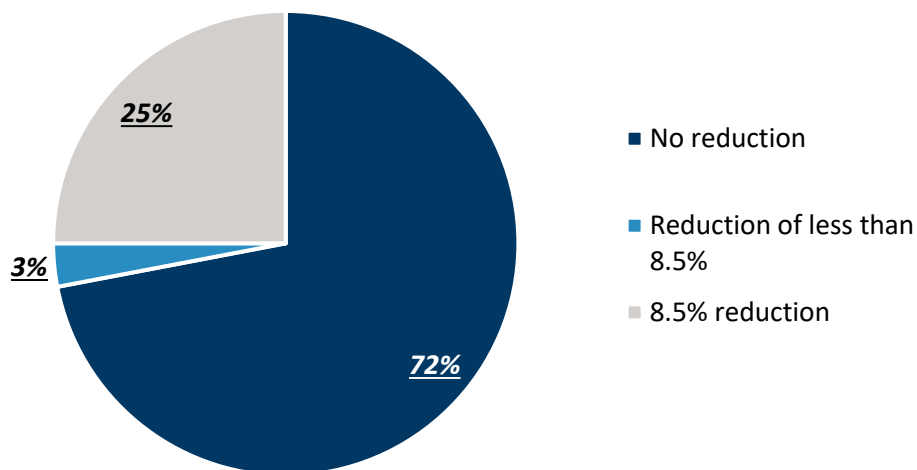
- (1) an 8.5% pension benefit reduction;
- (2) the freezing of DB accumulation for TRS and JRS members and the transfer of these members to DC plans;
- (3) the enrollment of teachers and judges in Social Security; and
- (4) for System 2000 members, the conversion of the hybrid accounts to DC accounts.

The 8.5% pension benefit reduction

A5.43 The latest April 23, 2021 FOMB Fiscal Plan proposes a reduction of 8.5% for monthly retirement benefit payments that exceed \$1,500 per month. These reductions would reduce monthly retirement benefit payments to a minimum of \$1,500 per month.¹⁶²

A5.44 Figure A5-3 sets out the percentage of retirees affected by the proposed cuts. As can be seen in the figure, approximately 28% of retirees (nearly 47,000 members) would be affected.¹⁶³

Figure A5-3: Percentage of retirees affected by the proposed cuts (%)



Source: 2021 Fiscal Plan, FOMB, April 23, 2021, page 277.

¹⁶² This reduction does not apply to Social Security or the Monthly Medical Benefit.

¹⁶³ $0.28 \times 166,576 = 46,641$ (source: Table A5-1). This figure includes beneficiaries.

The freezing of DB accumulation for JRS and TRS and the transfer to DC plans

- A5.45 TRS members hired prior to August 1, 2014 and all JRS members are currently accruing benefits under the DB components of their retirement plans. The April 23, 2021 FOMB Fiscal Plan proposes that JRS and remaining TRS benefit accruals be frozen by January 1, 2022, and that these employees be transitioned to DC accounts.¹⁶⁴
- A5.46 In the early years of the implementation of this reform, the cost saving to the Commonwealth would be relatively small. For example, in FY2024 this would result in savings of approximately \$6 million.¹⁶⁵ However, by 2044, savings are expected to exceed \$300 million per year.¹⁶⁶ Over the period from FY2022 to FY2051, this reform is expected to result in total savings of \$5.6 billion.¹⁶⁷

Increased enrollment in Social Security

- A5.47 Currently, teachers and judges under TRS and JRS do not participate in Social Security. The latest April 23, 2021 FOMB Fiscal Plan includes the enrollment of teachers and judges under the age of 45 in Social Security.¹⁶⁸

The System 2000 settlement

- A5.48 Employees that joined ERS on or after January 1, 2000 were enrolled in a hybrid cash balance plan design. The hybrid account balances were credited with employee contributions made to the plan and interest connected to the overall ERS trust return.¹⁶⁹ As a result of Act 106, these accounts were frozen as of June 30, 2017 and no longer were credited with either employee contributions or interest.¹⁷⁰

¹⁶⁴ 2021 Fiscal Plan, FOMB, April 23, 2021, pages 274 and 275.

¹⁶⁵ 2021 Fiscal Plan model, FOMB, May 11, 2021, tab 'Pensions', row 66.

¹⁶⁶ 2021 Fiscal Plan, FOMB, April 23, 2021, page 275.

¹⁶⁷ This compares to total savings of \$1.9 billion from the 8.5% cut (source: 2020 Fiscal Plan model, FOMB, June 11, 2020, 'Pensions' tab, rows 66 and 68).

¹⁶⁸ 2021 Fiscal Plan, FOMB, April 23, 2021, pages 277 and 278.

¹⁶⁹ Prior to Act 3, members could select from more than one option of hypothetical investment options to determine the earnings on their hybrid account balances. After Act 3, interest for all ERS hybrid account balances was changed to be based on 80% of the rate of return on the overall ERS pension trust (source: Report on the Puerto Rico Retirement Systems, EY, September 2019, page 34).

¹⁷⁰ 2021 Fiscal Plan, FOMB, April 23, 2021, page 278.

- A5.49 System 2000 participants who have not yet retired will receive the value of their contributions and any interest accrued under the terms of the plan as a deposit into their Act 106 DC accounts.¹⁷¹

Summary impact

- A5.50 Table A5-2 below sets out a summary of the number of active members and retirees in ERS affected by Act 3 and Act 106 and proposed pension reforms.

Table A5-2: Summary of the number of active members and retirees in ERS affected by Act 3 and Act 106 and proposed pension reforms

	Active members		Retirees	
	Predicted to be affected by 8.5% cut	Predicted to be unaffected by 8.5% cut	Affected by 8.5% cut	Unaffected by 8.5% cut
Affected by neither 2013 nor 2017 cuts	-	-	22,931	63,995
Affected by 2013 cuts only	-	-	2,196	4,949
Affected by 2017 cuts only	1	7,677	-	-
Affected by both 2017 cuts and 2013 cuts	47,529	63,450	-	-
Total	47,530	71,127	25,127	68,944

Note: The total number of retirees in the table excludes disabled members and beneficiaries while the figures in Table 9 and Table 10 of the main body of the report include these groups. Source: Segal pension data, September 8, 2021, slide 6.

¹⁷¹ 2021 Fiscal Plan, FOMB, April 23, 2021, page 278.

Appendix 6

Comparison of pensions in Puerto Rico and the 50 states

- A6.1 In 2016,¹⁷² the average annual Defined Benefit (“DB”) pension benefit of Puerto Rican government employees was lower than that of the lowest average annual DB pension benefit in the U.S. states and the District of Columbia. Puerto Rico’s average annual DB pension benefit was \$13,420 in 2016, whereas the U.S. average was \$27,453 in the same year. This is displayed in Table A6-1 below.

Table A6-1: Comparison of average annual DB of Puerto Rican government employees compared to the U.S., 2016 (\$)

	State	Local	State & Local
U.S.	26,396	33,520	27,453
Puerto Rico	-	13,420	13,420
Vermont	16,661	19,417	16,828
Indiana	16,720	27,845	16,931
Kansas	16,480	30,039	16,953
Iowa	17,015	18,922	17,019
Tennessee	16,209	24,586	17,692
North Dakota	17,760	20,155	17,941
Idaho	18,263	30,210	18,280
Wyoming	18,305	-	18,305
Montana	18,578	1,754	18,331
West Virginia	19,001	22,086	19,121
North Carolina	19,383	26,180	19,430
South Dakota	18,435	57,100	19,562
Arkansas	19,572	22,405	19,660
South Carolina	20,181	6,941	19,977
Oklahoma	19,840	23,537	20,005
Maine	20,006	-	20,006
New Hampshire	20,589	18,665	20,530
Minnesota	20,954	29,292	21,134
Washington	21,776	24,678	21,945
Delaware	22,454	18,962	21,987

¹⁷² 2016 is the most recent year for which data is available on the Puerto Rican government pension system.

Louisiana	22,606	16,836	22,261
Virginia	22,644	22,163	22,543
Missouri	23,178	21,532	22,898
Florida	21,267	32,482	23,079
Texas	22,266	31,473	23,157
Michigan	22,116	29,761	23,327
Alabama	23,454	25,642	23,587
Arizona	23,027	31,259	23,684
Utah	23,792	25,388	23,805
Mississippi	23,808	-	23,808
Kentucky	24,314	33,198	24,431
Maryland	22,720	30,842	24,665
Wisconsin	24,852	25,289	24,897
New Mexico	25,174	-	25,174
Nebraska	22,390	31,734	25,303
Alaska	25,184	44,141	25,481
Pennsylvania	27,140	23,981	26,382
Hawaii	27,086	-	27,086
Georgia	28,516	24,699	27,895
District of Columbia	-	29,980	29,980
Massachusetts	33,614	23,356	30,068
New Jersey	31,506	9,355	31,447
Ohio	32,279	38,126	32,333
New York	29,501	38,168	32,487
Oregon	32,822	36,690	32,957
Rhode Island	34,026	34,937	34,223
Colorado	36,358	24,458	34,921
Illinois	32,931	42,113	35,298
Nevada	36,028	-	36,028
Connecticut	40,956	27,431	37,164
California	35,988	43,152	37,589

Notes: (1) The most contemporaneous pension benefit data available for Puerto Rico is for 2016; (2) To calculate Puerto Rico's average annual pension benefits in FY2016 (of \$13,420) I calculated a weighted average of the ERS, TRS, and JRS monthly benefits (of \$995, \$1,428, and \$4,495 respectively), using the number of pensioners and beneficiaries in each category as weights (122,757, 43,305, and 514 respectively), and then multiplied the result (of \$1,118) by 12; (3) The 2016 ASPP survey that this table relies upon relates to the 2016 fiscal year (which runs between 1 July 2015 and 30 June 2016). (4) The District of Columbia does not administer state pension benefits as it is not a state; (5) Six geographies in the table above do not administer local pension benefits: (i) Wyoming; (ii) Maine; (iii) Mississippi; (iv) New Mexico; (v) Hawaii; and (vi) Nevada.

Sources: (1) Summary Data, State & Local Tables, 2016 Annual Survey of Public Pensions, U.S. Census Bureau, 2016; and (2) Report on the Puerto Rico Retirement Systems, EY, September 2019, page 2.

Appendix 7

Social Security impact on retirees' incomes

Introduction

- A7.1 This appendix sets out the calculations of the social security benefits paid to government employees in Puerto Rico and the U.S. states. The estimates of social security benefits are then combined with average Defined Benefit ("DB") pension benefits to yield estimates of Puerto Rico's and each state's average total retirement income.

Social security benefits

Average social security benefits paid to retirees

- A7.2 To calculate average security benefits paid to retirees in each state and Puerto Rico, total social security benefits paid to retirees in December 2016 are divided by the number of retirees receiving social security benefits in December 2016. This average is then annualized by multiplying by 12. This calculation is shown in Table A7-1 below.

Table A7-1: Average social security benefits paid to retirees, 2016

State	Retirees receiving social security in December 2016 [A]	Total social security benefits paid to retirees in December 2016 (\$ thousands) [B]	Average social security benefits paid to retirees in December 2016 (\$) [B] / [A] = [C]	Average social security benefits paid to retirees in 2016 (\$) [C] x 12 = [D]
U.S.	40,343,475	55,349,810	1,372	16,464
Puerto Rico	455,898	413,708	907	10,889
Alabama	669,776	895,762	1,337	16,049
Alaska	65,342	84,896	1,299	15,591
Arizona	916,047	1,271,120	1,388	16,651
Arkansas	418,853	541,541	1,293	15,515
California	4,049,771	5,407,482	1,335	16,023
Colorado	590,238	801,823	1,358	16,302
Connecticut	481,923	721,790	1,498	17,973
Delaware	144,280	211,562	1,466	17,596
District of Columbia	54,638	70,358	1,288	15,453
Florida	3,181,656	4,303,891	1,353	16,233

Georgia	1,157,084	1,551,035	1,340	16,086
Hawaii	200,592	270,160	1,347	16,162
Idaho	226,694	300,665	1,326	15,916
Illinois	1,522,000	2,117,272	1,391	16,693
Indiana	875,768	1,244,523	1,421	17,053
Iowa	448,784	611,843	1,363	16,360
Kansas	370,764	520,552	1,404	16,848
Kentucky	566,353	735,602	1,299	15,586
Louisiana	506,448	644,104	1,272	15,262
Maine	221,235	280,924	1,270	15,238
Maryland	681,024	974,584	1,431	17,173
Massachusetts	837,720	1,167,999	1,394	16,731
Michigan	1,425,674	2,067,238	1,450	17,400
Minnesota	716,577	1,008,266	1,407	16,885
Mississippi	393,012	503,133	1,280	15,362
Missouri	832,355	1,116,181	1,341	16,092
Montana	159,645	205,565	1,288	15,452
Nebraska	237,200	322,575	1,360	16,319
Nevada	366,270	490,349	1,339	16,065
New Hampshire	200,675	289,896	1,445	17,335
New Jersey	1,137,556	1,712,466	1,505	18,065
New Mexico	275,576	352,606	1,280	15,354
New York	2,436,860	3,448,429	1,415	16,981
North Carolina	1,382,757	1,881,196	1,360	16,326
North Dakota	90,200	117,006	1,297	15,566
Ohio	1,508,888	2,029,503	1,345	16,140
Oklahoma	497,084	658,661	1,325	15,901
Oregon	599,645	816,088	1,361	16,331
Pennsylvania	1,883,880	2,654,759	1,409	16,910
Rhode Island	149,847	207,401	1,384	16,609
South Carolina	737,196	1,010,548	1,371	16,450
South Dakota	124,445	160,401	1,289	15,467
Tennessee	910,021	1,228,295	1,350	16,197
Texas	2,618,163	3,486,487	1,332	15,980
Utah	263,496	365,815	1,388	16,660

Vermont	99,547	136,436	1,371	16,447
Virginia	1,010,928	1,410,412	1,395	16,742
Washington	904,793	1,287,638	1,423	17,078
West Virginia	272,938	366,645	1,343	16,120
Wisconsin	845,036	1,181,208	1,398	16,774
Wyoming	76,221	105,119	1,379	16,550

Source: OASDI Beneficiaries by State and County, 2016, Social Security Administration, August 2017, "Table 2" tab, column E; and "Table 3" tab, column E.

The percentage of government employees with social security covered employment

A7.3 To calculate the percentages of government employees with social security covered employment for each of the U.S. states and Puerto Rico in 2008, I divide the number of state and local government employees with social security covered employment by the total number of government employees in each state. I display these calculations in Table A7-2 below. I have used data from 2008 for these calculations due to a lack of more contemporaneous data.

Table A7-2: Percentage of government employees with social security covered employment, 2008

State	State and local government employees [E]	State and local government employees with social security covered employment [F]	State and local government employees with social security covered employment (%) [F] / [E] = [G]
U.S.	23,522,900	17,012,500	72.3%
Puerto Rico	262,900	227,600	86.6%
Alabama	391,900	361,600	92.3%
Alaska	64,900	42,600	65.6%
Arizona	387,800	369,600	95.3%
Arkansas	200,200	180,600	90.2%
California	2,491,000	1,085,500	43.6%
Colorado	420,000	122,300	29.1%
Connecticut	281,400	202,000	71.8%
Delaware	66,400	62,400	94.0%
District of Columbia	79,700	63,200	79.3%
Florida	1,137,600	1,005,700	88.4%

Georgia	704,500	516,000	73.2%
Hawaii	115,500	80,200	69.4%
Idaho	135,100	126,200	93.4%
Illinois	971,700	530,700	54.6%
Indiana	501,100	451,600	90.1%
Iowa	294,100	262,400	89.2%
Kansas	293,700	270,400	92.1%
Kentucky	370,900	273,600	73.8%
Louisiana	323,100	90,000	27.9%
Maine	122,000	66,700	54.7%
Maryland	465,100	420,800	90.5%
Massachusetts	479,200	19,800	4.1%
Michigan	758,000	666,200	87.9%
Minnesota	453,700	419,400	92.4%
Mississippi	255,000	234,800	92.1%
Missouri	472,800	343,700	72.7%
Montana	93,000	83,200	89.5%
Nebraska	156,800	147,700	94.2%
Nevada	158,400	27,800	17.6%
New Hampshire	107,400	95,300	88.7%
New Jersey	684,100	629,100	92.0%
New Mexico	197,300	178,600	90.5%
New York	1,750,000	1,692,900	96.7%
North Carolina	706,000	647,700	91.7%
North Dakota	73,100	63,700	87.1%
Ohio	849,200	21,300	2.5%
Oklahoma	311,000	283,700	91.2%
Oregon	295,300	271,000	91.8%
Pennsylvania	820,500	760,100	92.6%
Rhode Island	65,400	54,500	83.3%
South Carolina	380,200	352,800	92.8%
South Dakota	81,000	75,200	92.8%
Tennessee	492,900	445,400	90.4%
Texas	1,800,700	861,700	47.9%
Utah	228,600	207,600	90.8%

Vermont	60,900	59,600	97.9%
Virginia	685,800	645,700	94.2%
Washington	555,300	486,800	87.7%
West Virginia	157,400	144,300	91.7%
Wisconsin	498,300	438,300	88.0%
Wyoming	77,900	70,500	90.5%
Other	5,800	700	12.1%

Note: Only employed workers are considered in this table – not those who were already retired in 2008.

Source: Social Security: Mandatory Coverage of New State and Local Government Employees, Nuschler, Shelton & Topoleski, Congressional Research Service, July 25, 2011, pages 3 to 5.

- A7.4 To calculate the average social security benefits paid to government retirees in 2016, the average security benefits calculated above are multiplied by the percentage of government employees with social security covered employment in 2008. The calculations implicitly assume that the percentages of retired government employees with social security in 2016 are similar to the percentages of government employees with social security covered employment in 2008. The calculations also assume that the average social security benefits paid to government retirees is the same as the average paid to all retirees. These calculations are set out in Table A7-3 below.

Table A7-3: Average social security benefits paid to government retirees, 2016

State	Average social security benefits paid to retirees in 2016 (\$) [D]	Percentage of government employees with social security covered employment, 2008 [G]	Average social security benefits paid to government retirees in 2016 (\$) [D] x [G] = [H]
U.S.	16,464	72.3%	11,907
Puerto Rico	10,889	86.6%	9,430
Alabama	16,049	92.3%	14,813
Alaska	15,591	65.6%	10,228
Arizona	16,651	95.3%	15,869
Arkansas	15,515	90.2%	13,995
California	16,023	43.6%	6,986
Colorado	16,302	29.1%	4,744
Connecticut	17,973	71.8%	12,904
Delaware	17,596	94.0%	16,540

District of Columbia	15,453	79.3%	12,254
Florida	16,233	88.4%	14,350
Georgia	16,086	73.2%	11,775
Hawaii	16,162	69.4%	11,216
Idaho	15,916	93.4%	14,865
Illinois	16,693	54.6%	9,115
Indiana	17,053	90.1%	15,365
Iowa	16,360	89.2%	14,593
Kansas	16,848	92.1%	15,517
Kentucky	15,586	73.8%	11,503
Louisiana	15,262	27.9%	4,258
Maine	15,238	54.7%	8,335
Maryland	17,173	90.5%	15,541
Massachusetts	16,731	4.1%	686
Michigan	17,400	87.9%	15,295
Minnesota	16,885	92.4%	15,601
Mississippi	15,362	92.1%	14,149
Missouri	16,092	72.7%	11,699
Montana	15,452	89.5%	13,829
Nebraska	16,319	94.2%	15,373
Nevada	16,065	17.6%	2,827
New Hampshire	17,335	88.7%	15,376
New Jersey	18,065	92.0%	16,620
New Mexico	15,354	90.5%	13,896
New York	16,981	96.7%	16,421
North Carolina	16,326	91.7%	14,971
North Dakota	15,566	87.1%	13,558
Ohio	16,140	2.5%	404
Oklahoma	15,901	91.2%	14,501
Oregon	16,331	91.8%	14,992
Pennsylvania	16,910	92.6%	15,659
Rhode Island	16,609	83.3%	13,835
South Carolina	16,450	92.8%	15,265
South Dakota	15,467	92.8%	14,354
Tennessee	16,197	90.4%	14,642

Texas	15,980	47.9%	7,654
Utah	16,660	90.8%	15,127
Vermont	16,447	97.9%	16,101
Virginia	16,742	94.2%	15,771
Washington	17,078	87.7%	14,977
West Virginia	16,120	91.7%	14,782
Wisconsin	16,774	88.0%	14,761
Wyoming	16,550	90.5%	14,977

Source: Table A7-1 and Table A7-2.

Retirement income from DB plans and social security

- A7.5 In Table A7-4 below, the average social security benefits earned per government employee calculated in Table A7-3 are combined with the average DB pension benefits earned by government retirees in 2016 in Puerto Rico and in each state, as shown in Appendix 6. The average combined income in Puerto Rico of \$22,850 in 2016 is lower than the U.S. average of \$39,360 in the same year and lower than that of any state.

Table A7-4: Comparison of average annual retirement incomes for government retirees in Puerto Rico and the U.S. states, 2016 (\$)

State	Average DB pension benefit earned by government retirees (\$) [I]	Average social security benefit per government employee (\$) [H]	Combined retirement income (\$) [I] + [H] = [J]
U.S.	27,453	11,907	39,360
Puerto Rico	13,420	9,430	22,850
Louisiana	22,261	4,258	26,519
Maine	20,006	8,335	28,341
Massachusetts	30,068	686	30,754
Texas	23,157	7,654	30,811
North Dakota	17,941	13,558	31,499
Iowa	17,019	14,593	31,612
Montana	18,331	13,829	32,160
Indiana	16,931	15,365	32,295
Tennessee	17,692	14,642	32,334
Kansas	16,953	15,517	32,470

Ohio	32,333	404	32,736
Vermont	16,828	16,101	32,929
Idaho	18,280	14,865	33,145
Wyoming	18,305	14,977	33,282
Arkansas	19,660	13,995	33,654
West Virginia	19,121	14,782	33,903
South Dakota	19,562	14,354	33,915
North Carolina	19,430	14,971	34,401
Oklahoma	20,005	14,501	34,507
Missouri	22,898	11,699	34,597
South Carolina	19,977	15,265	35,242
Alaska	25,481	10,228	35,709
New Hampshire	20,530	15,376	35,907
Kentucky	24,431	11,503	35,934
Minnesota	21,134	15,601	36,735
Washington	21,945	14,977	36,922
Florida	23,079	14,350	37,429
Mississippi	23,808	14,149	37,957
Hawaii	27,086	11,216	38,303
Virginia	22,543	15,771	38,313
Alabama	23,587	14,813	38,400
Delaware	21,987	16,540	38,527
Michigan	23,327	15,295	38,622
Nevada	36,028	2,827	38,856
Utah	23,805	15,127	38,932
New Mexico	25,174	13,896	39,070
Arizona	23,684	15,869	39,553
Wisconsin	24,897	14,761	39,658
Colorado	34,921	4,744	39,665
Georgia	27,895	11,775	39,669
Maryland	24,665	15,541	40,207
Nebraska	25,303	15,373	40,675
Pennsylvania	26,382	15,659	42,041
District of Columbia	29,980	12,254	42,234
Illinois	35,298	9,115	44,413

California	37,589	6,986	44,575
Oregon	32,957	14,992	47,949
Rhode Island	34,223	13,835	48,058
New Jersey	31,447	16,620	48,066
New York	32,487	16,421	48,908
Connecticut	37,164	12,904	50,068

Notes: (1) The most contemporaneous pension benefit data available for Puerto Rico is for 2016; (2) To calculate Puerto Rico's average annual pension benefits in FY2016 (of \$13,420), I calculated a weighted average of the ERS, TRS, and JRS monthly benefits (of \$995, \$1,428, and \$4,495 respectively), using the number of pensioners and beneficiaries in each category as weights (122,757, 43,305, and 514 respectively), and then multiplied the result (of \$1,118) by 12; (3) The 2016 ASPP survey that this table relies upon relates to the 2016 fiscal year (which runs between July 1, 2015 and June 30, 2016).

Sources: (1) Report on the Puerto Rico Retirement Systems, EY, September 2019, page 2; (2) Summary Data, State & Local Tables, 2016 Annual Survey of Public Pensions, U.S. Census Bureau, 2016; and (3) Table A7-3.

Appendix 8

Cost of living in Puerto Rico

Cost of living measure

- A8.1 Cost of living is an important measure that indicates the average cost of essential goods and services such as food, utilities, transportation, housing costs and healthcare.
- A8.2 The Council for Community and Economic Research (“C2ER”) collects pricing data for Puerto Rico’s San Juan-Carolina-Caguas metropolitan area on a quarterly basis in addition to about 300 cities and urban areas in the U.S.¹⁷³ The San Juan metropolitan area’s population was about 2 million in 2020¹⁷⁴ (61% of Puerto Rico’s 2020 population)¹⁷⁵. Given this, San Juan-Carolina-Caguas’s cost of living can be considered a reliable proxy for Puerto Rico’s cost of living.

Comparison of cost of living between Puerto Rico and the mainland US

- A8.3 Table A8-1 below sets out C2ER’s cost of living indices by expenditure category for San Juan-Carolina-Caguas for the last four quarters for which data was available at the time of writing this report. Indices are calculated such that the average value across all participating areas is equal to 100. For example, an index value of 120 would indicate that prices are 20% higher than the average price across all areas measured.¹⁷⁶ Expenditure categories have varying weights depending on typical spending patterns in the USA.¹⁷⁷

¹⁷³ Cost of living index, Puerto Rico Institute of Statistics website, accessed March 30, 2021 [\[link\]](#). The sample size ranged between 289 and 307 across quarterly reports for 2015-2020.

¹⁷⁴ 2020 Population and Housing State Data, U.S. Census Bureau website, accessed September 2, 2021 [\[link\]](#).

¹⁷⁵ $2,081,265 \div 3,285,874 = 60.6\%$. Puerto Rico’s 2020 population was 3,285,874 according to the U.S. Census Bureau website (source: Nevada and Idaho Are the Nation’s Fastest-Growing States, U.S. Census Bureau, December 19, 2018 [\[link\]](#)).

¹⁷⁶ FAQ about Cost of living index, Council Community and Economic Research website, accessed March 30, 2021, page 2.

¹⁷⁷ Cost of living index manual, Council Community and Economic Research, pages 28 to 31.

Table A8-1: Cost of living index by expenditure category for the San Juan-Carolina-Caguas area

	Q3 2019	Q1 2020	Q3 2020	Q1 2021	Average
Grocery items	119	119	119	121	119
Housing	85	83	81	78	82
Utilities	154	160	159	165	160
Transportation	95	99	98	96	97
Health care	68	66	66	65	66
Miscellaneous	94	96	97	97	96
Total index	99	101	100	100	100

Notes: (1) Indices for each component are calculated such that the average value across all participating areas is equal to 100; (2) There is no data for Q4 2019 because C2ER records cost of living data only three times per year;¹⁷⁸ and (3) C2ER omitted the data collection for Q2 2020 due to the COVID-19 pandemic.

Source: C2ER reports.

Conclusion

A8.4 Table A8-1 shows that, on average, Puerto Rico's total cost of living is broadly the same as that of areas in the U.S. states. However, I note that there are significant differences between Puerto Rico's and the U.S. states' costs of living across expenditure categories. Table A8-1 shows that, on average, in Puerto Rico relative to U.S. states:

- (1) prices for utilities are higher by 60%;
- (2) prices for healthcare services are lower by 34%;
- (3) prices for grocery items are higher by 19%; and
- (4) prices for housing related items are lower by 18%.

¹⁷⁸ Cost of living index, Puerto Rico Institute of Statistics website, accessed July 30, 2021, page 1 [\[link\]](#).

Appendix 9

More details on the fiscal multiplier

Introduction

- A9.1 Fiscal multipliers are used to measure the short-term impacts of discretionary fiscal policies on output,¹⁷⁹ with output generally measured in terms of GDP or GNP. To calculate the impact of the proposed pension cuts on Puerto Rican GNP, a relevant fiscal multiplier must be determined.

Fiscal multiplier determinants

- A9.2 There are two types of determinants which affect the size of the fiscal multiplier:¹⁸⁰
- (1) structural determinants; and
 - (2) temporary determinants.

Structural determinants

- A9.3 Structural determinants are characteristics of a country or region that affect an economy's response to fiscal shocks in "*normal*" times. Key structural determinants include the following:
- (1) **Trade openness:** Countries with a lower propensity to import (large countries or countries only partially open to trade) tend to have higher fiscal multipliers.
 - (2) **Labor market rigidity:** Countries with more rigid labor markets (with stronger unions or with stronger labor market regulation) have larger fiscal multipliers if this implies wages are less flexible.
 - (3) **Exchange rate regimes:** Countries with flexible exchange rate regimes tend to have smaller multipliers, because exchange rate movements can offset the impact of discretionary fiscal policy on the economy.

¹⁷⁹ Fiscal Multipliers: Size, Determinants, and Use in Macroeconomic Projections, Batini, Eyraud, Forni & Weber, IMF, September 2014, page 1 [\[link\]](#).

¹⁸⁰ Fiscal Multipliers: Size, Determinants, and Use in Macroeconomic Projections, Batini, Eyraud, Forni & Weber, IMF, September 2014, page 6 [\[link\]](#).

Temporary determinants

A9.4 Temporary determinants are factors which make fiscal multipliers deviate from “normal” levels. The IMF identifies two primary temporary determinants:¹⁸¹

- (1) **The business cycle:** Fiscal multipliers tend to be larger in economic downturns.
- (2) **The degree of monetary accommodation to fiscal shocks:** The ability to implement an expansionary monetary policy and to lower interest rates in response to negative fiscal shocks can lower the fiscal multiplier.

Estimates of Puerto Rico’s fiscal multiplier

A9.5 In its 2021 Fiscal Plan, the FOMB assumes a fiscal multiplier of 1.34, based on a 2014 study in the American Economic Review published by Emi Nakamura and Jon Steinsson (“**Nakamura and Steinsson**”).¹⁸² In this study, the authors examine fiscal expenditure shocks on U.S. regional and state economies to determine a range of fiscal multipliers for regions and U.S. states.¹⁸³ A fiscal multiplier based on this study has been applied in Commonwealth and FOMB-certified Fiscal Plans since the Commonwealth’s Fiscal Plan dated October 14, 2016.¹⁸⁴ A fiscal multiplier of 1.34 implies that a \$100 million decrease in government expenditure would result in a \$134 million decrease in Puerto Rico’s GNP.¹⁸⁵

¹⁸¹ Fiscal Multipliers: Size, Determinants, and Use in Macroeconomic Projections, Batini, Eyraud, Forni & Weber, IMF, September 2014, pages 7 and 8 [\[link\]](#).

¹⁸² 2021 Fiscal Plan model, FOMB, May 11, 2021, “*Macro Forecast*” tab, cell D39; and Declaration of Andrew Wolfe in support of Opposition of the FOMB to the Motion of the Ad Hoc Group of PREPA Bondholders, National Public Finance Guaranty Municipal Corp., Assured Guaranty Corp., Assured Guaranty Municipal Corp., and Syncora Guarantee Inc. for Relief from the Automatic Stay to allow Movants to enforce their Statutory Right to have a Receiver appointed, U.S. District Court for the District of Puerto Rico, July 23, 2019, ¶44.

¹⁸³ Fiscal Stimulus in a Monetary Union: Evidence from U.S. Regions, Nakamura & Steinsson, American Economic Review, 2014, 104(3), page 788 [\[link\]](#).

¹⁸⁴ 2016 Fiscal Plan, AAFAF, October 14, 2016, page 89.

¹⁸⁵ \$100 million x 1.34 = \$134 million.

A9.6 In their paper, Nakamura and Steinsson calculate a fiscal multiplier of 1.34 by examining the effects of prime military contracts on state-level economic output, deflated using the Consumer Price Index (“CPI”), amongst a range of other fiscal multipliers, as shown in the table below.¹⁸⁶

Table A9-1: Fiscal multipliers calculated by Nakamura and Steinsson

	Output		Output defl. state CPI		Employment		CPI	Population
	States	Regions	States	Regions	States	Regions	States	States
Prime military contracts	1.43 (0.36)	1.85 (0.58)	1.34 (0.36)	1.85 (0.71)	1.28 (0.29)	1.76 (0.62)	0.03 (0.18)	-0.12 (0.17)
Prime contracts plus military compensation	1.62 (0.40)	1.62 (0.84)	1.36 (0.39)	1.44 (0.96)	1.39 (0.32)	1.51 (0.91)	0.19 (0.16)	0.07 (0.21)
Observations	1,989	390	1,989	390	1,989	390	1,763	1,989

Note: (1) The fiscal multiplier used by the FOMB is in bold and circled in red; (2) the italicized numbers in parentheses are the associated standard errors; (3) the regression outputs in the “States” columns relate to state-level data, whereas the regression outputs in the “Regions” columns relate to 10 regions, each of which consists of multiple states, aggregated along census division lines;¹⁸⁷ (4) the regression outputs under the “Output” columns relate to nominal GDP, whereas the “Output defl. state CPI” regression outputs relate to real GDP, which has been deflated using state CPI; (5) the regression outputs under the “Employment”, “CPI”, and “Population” columns relate to the effects on these variables from incremental military contract spending.

Source: Fiscal Stimulus in a Monetary Union: Evidence from U.S. Regions, Nakamura & Steinsson, American Economic Review, 2014, 104(3), page 763.

¹⁸⁶ Fiscal Stimulus in a Monetary Union: Evidence from U.S. Regions, Nakamura & Steinsson, American Economic Review, 2014, 104(3), page 763.

¹⁸⁷ For example, one of the regions used by Nakamura and Steinsson consists of the following states: Delaware, Maryland, Washington DC, Virginia, and West Virginia (source: Fiscal Stimulus in a Monetary Union: Evidence from U.S. Regions, Nakamura & Steinsson, American Economic Review, 2014, 104(3), page 759).

Application of Puerto Rico's fiscal multiplier

- A9.7 The 2021 Fiscal Plan model makes the following two assumptions:
- (1) the proposed revenue and expenditure measures (the “**fiscal measures**”) outlined in the model primarily affect the size of the Puerto Rican economy in the year the measures are introduced; and
 - (2) any impacts from the proposed fiscal measures are ‘unwound’ over the five years following the cut, such that they have no lasting effect after five years.
- A9.8 The FOMB assumes that fiscal measures affecting government expenditure primarily affect GNP growth in the years that they are introduced. Over the next five years, this GNP growth effect is ‘unwound’ through adjustments to the GNP growth rate. The approach is based on econometric studies, which show that exogenous fiscal shocks typically only affect economies for a maximum of five years.¹⁸⁸

¹⁸⁸ 2021 Fiscal Plan, FOMB, April 23, 2021, page 40.

Appendix 10

Causes of out-migration from Puerto Rico and comparable U.S. geographies

Introduction

- A10.1 As shown in Figure 7 of the main body of this report, Puerto Rico has suffered significant out-migration over the past 15 years. Between 2005 and 2019, Puerto Rico experienced average net migration of approximately (77,000) to U.S. states per year.¹⁸⁹ This has contributed towards Puerto Rico's population decline, from its peak of 3.8 million in 2004, to 3.3 million by 2020 – a 14% decrease.¹⁹⁰
- A10.2 Figures 6a and 6b of the main body of this report show that between 1950 and 2004, Puerto Rico's population grew significantly, but has been declining from 2005 onwards.¹⁹¹ Meanwhile, the populations of Detroit, Baltimore, and New Orleans have been steadily declining throughout the 1960 to 2020 period. New Orleans' population dipped significantly in 2006 (and recovered shortly after) due to Hurricane Katrina. Out-migration has played a role in each of these examples.
- A10.3 This appendix discusses the history of out-migration from Puerto Rico, as well as the out-migration of the following comparable U.S. geographies:
- (1) Detroit;
 - (2) New Orleans; and
 - (3) Baltimore.

Summary of out-migration from Puerto Rico

- A10.4 The data underpinning Figure 7 in the main body of this report is shown in Table A10-1 below.

¹⁸⁹ State-to-State Migration Flows, U.S. Census Bureau, accessed April 20, 2021 [\[link\]](#).

¹⁹⁰ $3,285,874/3,826,878 - 1 = 0.14$. Puerto Rico's population as of April 1, 2020, U.S. Census Bureau, accessed July 16, 2021 [\[link\]](#).

¹⁹¹ The U.S. Census Bureau's 2020 population figure is slightly higher than the estimate for 2019. I note, however, that the Census Bureau's population estimates for 2011 to 2019 do not appear to have yet been revised. Thus, no definite conclusion can yet be drawn.

Table A10-1: Immigration, out-migration, and net migration between Puerto Rico and U.S. states (1985 to 2019)

Year	Immigration	Out-migration	Net migration
1985 - 1990	n/a	(42,777)	n/a
1995 - 2000	22,558	(48,595)	(26,037)
2005	34,764	(47,208)	(12,444)
2006	30,507	(67,110)	(36,603)
2007	29,136	(60,388)	(31,252)
2008	33,734	(67,862)	(34,128)
2009	32,108	(62,074)	(29,966)
2010	31,732	(59,885)	(28,153)
2011	22,649	(76,218)	(53,569)
2012	20,044	(74,500)	(54,456)
2013	24,652	(73,846)	(49,194)
2014	19,771	(83,844)	(64,073)
2015	24,762	(89,000)	(64,238)
2016	21,196	(88,676)	(67,480)
2017	20,167	(97,488)	(77,321)
2018	20,900	(133,451)	(112,551)
2019	31,144	(66,021)	(34,877)
2005 - 2019 total	397,266	(1,147,571)	(750,305)

Note: (1) For the “1985-1990” period, I was unable to find data for immigration into Puerto Rico. This meant I was not able to calculate net migration for the “1985-1990” period; (2) to calculate the annual rate of out-migration between 1985 and 1990, I divide total out-migration over this period (of 213,886) by five to give 42,777; and (3) likewise, for the 1995 to 2000 period, I divide total immigration and out-migration over this period (of 112,788 and 242,973 respectively) by five to give annual rates of 22,558 and 48,595 respectively.

Source: (1) State-to-State Migration Flows, U.S. Census Bureau, accessed April 20, 2021 [[link](#)]; (2) Migration between Counties in the United States and Puerto Rico: 1995 to 2000, U.S. Census Bureau, March 3, 2004 [[link](#)]; and (3) State of residence in 1990 by state of residence in 1985, U.S. Census Bureau, October 12, 2000 [[link](#)].

A10.5 While Puerto Rico has experienced net out-migration since at least the 1960s,¹⁹² two factors have contributed towards the trends of continued Puerto Rican out-migration and Puerto Rican population decline observed since 2005.

(1) **Economic factors:** the removal of beneficial Puerto Rican tax breaks between 1996 and 2006, the subsequent economic depression, and the Great Recession of 2008; and

(2) **Natural disasters:** Hurricanes Irma and Maria in 2017.

A10.6 I discuss each of these factors in turn below.

(1) Economic factors

A10.7 In 1996, then U.S. President Bill Clinton signed legislation to phase out Section 936 of the Internal Revenue Code by 2006. Section 936 granted U.S. corporations tax exemptions for income originating from U.S. territories, such as Puerto Rico.¹⁹³ When the tax exemptions provided by Section 936 were fully removed in 2006, many mainland U.S. companies moved out of Puerto Rico, which resulted in the loss of thousands of manufacturing jobs.¹⁹⁴ This triggered an economic depression in 2006, that was only worsened by the Great Recession of 2008.¹⁹⁵

A10.8 In response to Puerto Rico's deteriorating economy, among other factors, approximately 750,000 Puerto Ricans migrated out of Puerto Rico to U.S. states between 2005 and 2019.¹⁹⁶ Of those who left Puerto Rico in reaction to the worsening economy, a disproportionate number were, and continue to be, more highly educated. This is evident in Figure A10-1 below.

¹⁹² Net migration - Puerto Rico, World Bank [\[link\]](#).

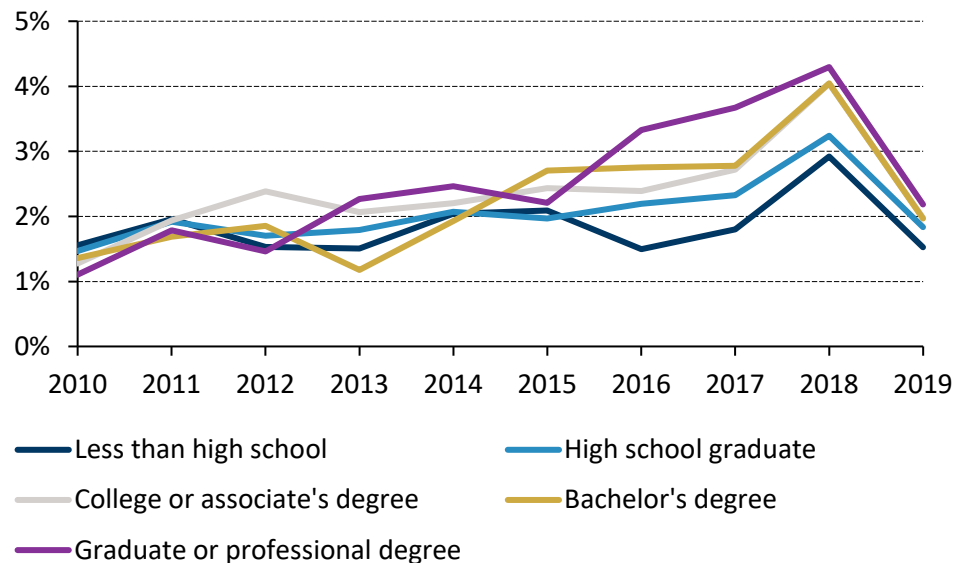
¹⁹³ The Puerto Rican Economic Activity Tax Credit: Current Proposals and Scheduled Phaseout, Brumbaugh, Congressional Research Service, October 4, 2000, page 1 [\[link\]](#).

¹⁹⁴ Puerto Rican Population Declines on Island, Grows on U.S. Mainland, Pew Research Center, August 11, 2014, page 19 [\[link\]](#).

¹⁹⁵ Puerto Rico's Economic Crisis: Overview and Recommendations for Action, Hispanic Federation, October 2015, page 8 [\[link\]](#).

¹⁹⁶ Puerto Rico's Economic Crisis: Overview and Recommendations for Action, Hispanic Federation, October 2015, page 8 [\[link\]](#); and Table A10-1.

Figure A10-1: Percentage of each population group emigrating from Puerto Rico to U.S. states each year by educational attainment, 2011 to 2019 (%)



Note: To calculate the percentage of each educational attainment group emigrating from Puerto Rico to U.S. states each year, the number of Puerto Ricans emigrating to U.S. states in the current year is divided by the total number of Puerto Ricans in each educational attainment group in the prior year.

Sources: (1) Geographical mobility in the past year by educational attainment for residence one year ago in Puerto Rico, American Community Survey, U.S. Census Bureau, accessed August 5, 2021 [\[link\]](#); and (2) Educational attainment, American Community Survey, U.S. Census Bureau, accessed August 5, 2021 [\[link\]](#).

(2) Natural disasters

A10.9 Out-migration from Puerto Rico was exacerbated by two natural disasters in quick succession:

- (1) Hurricane Irma on September 7, 2017;¹⁹⁷ and
- (2) Hurricane Maria on September 20, 2017.¹⁹⁸

¹⁹⁷ Hurricane Irma Skirts Puerto Rico, Leaves 1 Million Without Power, Johnson, Arkin, Cumming & Karins, NBC, September 7, 2017 [\[link\]](#).

¹⁹⁸ Hurricane Maria's devastation of Puerto Rico, Scott, National Oceanic and Atmospheric Administration, July 25, 2018, page 1 [\[link\]](#).

- A10.10 These hurricanes resulted in extensive damage to Puerto Rican homes and infrastructure. Hurricane Irma caused widespread electricity and water outages in Puerto Rico, as well as three deaths,¹⁹⁹ and Hurricane Maria is estimated to have caused \$90 billion in damages to Puerto Rico and the U.S. Virgin Islands, with electricity, water and telecommunication services being knocked out in Puerto Rico.²⁰⁰
- A10.11 These hurricanes accelerated Puerto Rico's population exodus.²⁰¹ It is estimated that approximately 2% to 4% of Puerto Rico's population vacated the island in the year after Hurricane Maria.²⁰²

Summaries of out-migration from selected U.S. geographies

- A10.12 I summarize the histories of out-migration from the following U.S. geographies below:
- (1) Detroit;
 - (2) New Orleans; and
 - (3) Baltimore.
- (1) *Detroit***
- A10.13 In 1950, the city of Detroit's population peaked at 1.9 million, and has been declining steadily ever since. According to the U.S. Census Bureau, by 2020, Detroit's population had fallen to 665,369 – a decrease of 64% since the peak.²⁰³
- A10.14 Between 1950 and 1970, the city of Detroit's population fell from 1.9 million to 1.5 million. At the same time, the population of the wider metropolitan area of Detroit increased from 3.0 million to 4.4 million. This period was categorized by suburbanization, which affected all U.S. cities during this period, and was not unique to Detroit.²⁰⁴

¹⁹⁹ Hurricane Irma, Tropical Cyclone Report, Cangialosi, Latta & Berg, National Hurricane Center, 30 June 2018, pages 14 and 15 [\[link\]](#).

²⁰⁰ Hurricane Maria, Tropical Cyclone Report, Pasch, Penny & Berg, National Hurricane Center, February 14, 2019, page 7 [\[link\]](#).

²⁰¹ Puerto Rico's population declined sharply after hurricanes Maria and Irma, Pew Research Center, July 26, 2019 [\[link\]](#).

²⁰² Out-migration from and return migration to Puerto Rico after Hurricane Maria: evidence from the consumer credit panel, DeWaard, Johnson & Whitaker, January 20, 2020, page 6.

²⁰³ Michigan, Subcounty Resident Population Estimates, City and Town Population Totals: 2010-2020, U.S. Census Bureau, accessed August 6, 2021, cell X129 [\[link\]](#).

²⁰⁴ What happened to and in Detroit?, McDonald, Urban Studies Journal, January 23, 2014, p3319 [\[link\]](#).

A10.15 However, from 1970, both Detroit's city and metropolitan populations began to fall.²⁰⁵ While continued suburbanization, spurred on by political division, opposition to desegregation, and increased racial tensions, continued to play a role, economic factors related to the decline of the U.S. automobile industry, and the 1973 to 1975 recession, also exacerbated out-migration from Detroit. These two factors are discussed below.

(i) Continued suburbanization

A10.16 Middle class families began leaving the city of Detroit at an increased rate in the 1970s. This was due to the following factors (amongst others):

- (1) social unrest (e.g., the 1967 Detroit riots);²⁰⁶ and
- (2) the out-migration of middle-class families to either suburban or rural areas "irreparably harmed" the city of Detroit's: (i) tax base; (ii) commercial enterprises; and (iii) finances. This accelerated the decline, which further encouraged remaining middle-class families to leave.²⁰⁷

(ii) Economic factors

A10.17 The rise of OPEC in the 1970s led to fuel shortages that crippled the U.S. automobile industry, upon which Detroit was highly reliant. This oil crisis, which peaked in 1973, combined with heavy government spending on the Vietnam War,²⁰⁸ resulted in a US-wide recession from November 1973 to March 1975. The USA's real GNP fell 6.6% during this period, making this the most severe recession since the end of World War II.²⁰⁹ In addition, the U.S. manufacturing economy began to decline from 1979 onwards.²¹⁰ The resulting downfall of the U.S. automobile industry resulted in large population reductions in Detroit's population because of the city's "high reliance on the automobile industry".²¹¹

²⁰⁵ Detroit's metropolitan population enjoyed a brief and minor recovery during the 1990s, but has otherwise fallen in every decade since 1970.

²⁰⁶ Rethinking the Politics of White Flight in the Postwar City, Thompson, Journal of Urban History, Vol. 25, No. 2, January 1999, page 192.

²⁰⁷ Rethinking the Politics of White Flight in the Postwar City, Thompson, Journal of Urban History, Vol. 25, No. 2, January 1999, pages 164 and 168.

²⁰⁸ Recession: CNBC Explains, Koba, CNBC, July 21, 2011 [\[link\]](#).

²⁰⁹ The 1974-75 Recession in the USA: A Lot of Facts and Some Lessons, Molnar, Acta Oeconomica, Vol. 17, No. 2, 1976, page 177.

²¹⁰ New Perspectives on the Decline of U.S. Manufacturing Employment, Fort, Pierce & Schott, Journal of Economic Perspectives, Vol. 32, No. 2, Spring 2018, page 47 [\[link\]](#).

²¹¹ Is Detroit dead?, Eisinger, Journal of Urban Affairs, Vol. 36, No. 1, 2013, page 4.

Summary

- A10.18 The factors described above resulted in an accelerator effect that took hold in Detroit. The significant out-migration from the city reduced Detroit's tax base, which furthered the economic decay in the city, and encouraged others to leave.
- A10.19 This effect was intensified by a state revenue sharing mechanism employed by the state of Michigan. As part of this scheme, the state of Michigan returns a portion of Detroit's state taxes using a formula largely driven by population. Given the stark fall in Detroit's population, Detroit's revenue sharing income declined by 48% between 2002 and 2013, which resulted in additional strain on Detroit's finances.²¹²

(2) New Orleans

- A10.20 New Orleans's population decreased from 494,000 to 230,000 (a decrease of approximately 53%) between 2005 and 2006.²¹³ This sharp decrease was due to Hurricane Katrina that caused extensive damage to the city in August 2005. Since 2006, New Orleans's population recovered slowly and, by 2016, reached 390,000 (approximately 79% of the pre-hurricane population in 2015). The population has remained approximately at that level as of July 2020.²¹⁴
- A10.21 Hurricane Katrina had a significant negative impact on New Orleans. The hurricane caused an average of 95,000 over-the-year job losses in the first 10 months after the hurricane (that is, there were on average 95,000 fewer jobs in a given month when compared to the previous year)²¹⁵ and damaged 70% of all occupied housing units. In total, it is estimated that the city suffered \$135 billion worth of damage.²¹⁶

²¹² A Comparison of Financial Indicators: The Case of Detroit, Stone, Singla, Comeaux & Kirschner, Public Budgeting & Financings, Winter 2015, page 92.

²¹³ Population recovery in New Orleans after Hurricane Katrina, DeWaard, October 27, 2015, page 450. Figures are rounded to the nearest thousand.

²¹⁴ Louisiana, Subcounty Resident Population Estimates, City and Town Population Totals: 2010-2020, U.S. Census Bureau, accessed August 6, 2021, cell X206 [\[link\]](#).

²¹⁵ The effects of Hurricane Katrina on the New Orleans economy, Dolfman, Wasser & Bergman, June 2007, page 1 [\[link\]](#).

²¹⁶ Facts for Features: Katrina impact, Plyer, The Data Center, August 26, 2016 [\[link\]](#).

(3) Baltimore

- A10.22 As with Detroit, Baltimore's population peaked in 1950 at almost 950,000 and has been declining steadily till today.²¹⁷ Since then, Baltimore's population had fallen to 586,131 by 2020 – a 38.3% decrease from Baltimore's population peak.²¹⁸
- A10.23 There are multiple reasons as to why Baltimore's population decreased since 1950:
- (1) **1950 - 1970:** Baltimore experienced significant post-war suburbanization during which its population decreased by approximately 45,000;²¹⁹
 - (2) **1970s:** construction of highways through Baltimore caused significant housing demolitions in the city and further incentivized out-migration;²²⁰
 - (3) **1990s:** Baltimore experienced higher-than-average and increasing violent crime rates that further contributed to out-migration;²²¹ and
 - (4) **2015 onwards:** In 2015, high incidence of property crime, high property taxes and poorly performing schools were identified as factors contributing to out-migration.²²² Since then, Baltimore's violent crime rate increased significantly and currently Baltimore has one of the highest crime rates across the U.S. (98% of the communities in the U.S. are safer than Baltimore).²²³

²¹⁷ Key Trends, The Comprehensive Master Plan, Department of Planning, City of Baltimore, July 9, 2006, page 51 [\[link\]](#).

²¹⁸ Maryland, Subcounty Resident Population Estimates, City and Town Population Totals: 2010-2020, U.S. Census Bureau, accessed August 6, 2021, cell X6 [\[link\]](#).

²¹⁹ Baltimore experienced net out-migration of 10,000 people in the 1950s and 35,000 people in the 1960s (45,000 total). Source: The History of Baltimore, The Comprehensive Master Plan, Department of Planning, City of Baltimore, July 9, 2006, pages 41 and 42 [\[link\]](#).

²²⁰ The History of Baltimore, The Comprehensive Master Plan, Department of Planning, City of Baltimore, July 9, 2006, pages 43 and 44 [\[link\]](#).

²²¹ Crime Trends between 1990 and 2016, Brennan Center For Justice, pages 6 and 7 [\[link\]](#).

²²² 'Baltimore population drops below 600,000, the lowest total in a century, census estimates show', Baltimore Sun, March 26, 2020 [\[link\]](#).

²²³ 'Baltimore population drops below 600,000, the lowest total in a century, census estimates show', Baltimore Sun, March 26, 2020 [\[link\]](#); and Crime rates, Baltimore, MD, Neighborhood Scout, accessed August 5, 2021 [\[link\]](#).

Appendix 11

Healthcare funding in Puerto Rico

Funding of healthcare insurance programs in Puerto Rico

- A11.1 The three main public healthcare insurance systems in Puerto Rico are:
- (1) **Medicaid:** mainly provides coverage to low-income households;
 - (2) **Medicare:** mainly provides coverage to retired and disabled citizens; and
 - (3) **Children's Health Insurance Program ("CHIP"):** provides coverage to children and pregnant women whose household income is too high to qualify for Medicaid coverage. Puerto Rico provides CHIP coverage to children under age 19 whose household incomes are below 266% of Puerto Rico's poverty level (defined as an annual income of \$22,631 for a family of four).²²⁴
- A11.2 This appendix sets out detailed information on funding of Medicaid and Medicare in Puerto Rico (CHIP is not relevant for the purposes of this report).

Medicaid in Puerto Rico

- A11.3 Medicaid provides healthcare coverage to eligible low-income adults, children, pregnant women, elderly adults, and people with disabilities. The program is administered by U.S. states or territories. Medicaid is funded jointly by the territory itself and the federal government.²²⁵

Sources of Medicaid funding in Puerto Rico

- A11.4 The FOMB's 2021 Fiscal Plan sets out three main sources of Puerto Rico's funding for Medicaid:
- (1) federal funding;
 - (2) special revenue funding ("**SRF**") that consists of: (i) municipal intra-governmental transfers; (ii) employer contributions; and (iii) prescription drug rebates;²²⁶ and
 - (3) general funding that is sourced directly from the Commonwealth's general budget.

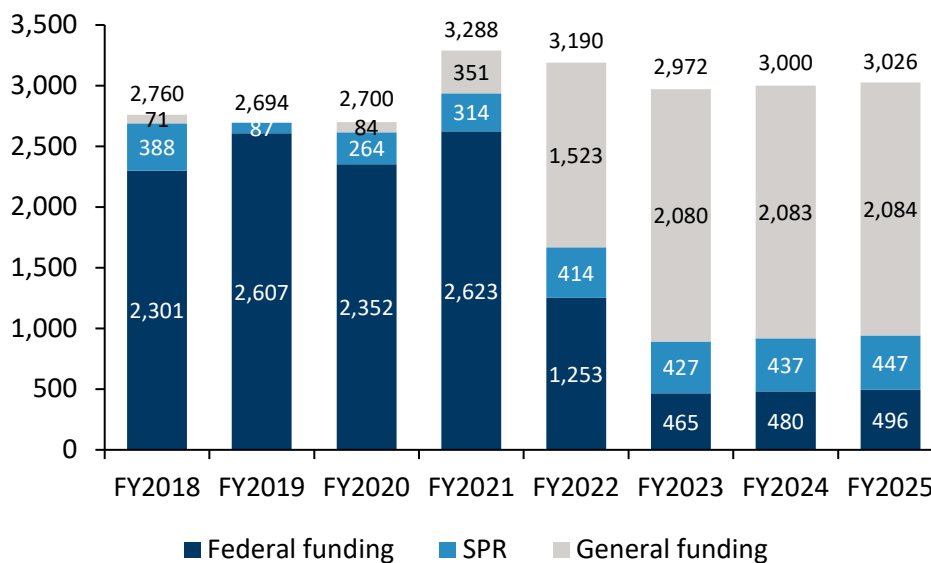
²²⁴ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 1 [\[link\]](#).

²²⁵ About Medicaid, Medicaid website, accessed April 22, 2021 [\[link\]](#).

²²⁶ 2021 Fiscal Plan, FOMB, April 23, 2021, pages 46 and 47.

A11.5 Figure A11-1 below summarizes Puerto Rico’s historical funding for Medicaid for the fiscal years from FY2018 to FY2019 and projected funding from FY2020 to FY2025 as per the FOMB’s 2021 Fiscal Plan.

Figure A11-1: Sources of funding for Medicaid in Puerto Rico, FY2018 to FY2025 (\$ millions)



*Note: FY2018 and FY2019 figures are actual, and FY2020 to FY2025 figures are estimates.
Source: 2021 Fiscal Plan model, FOMB, May 11, 2021, tab “Medicaid Annual Summary”, rows 265 to 267. See Appendix 13 for additional details.*

A11.6 The FOMB assumes that the share of federal funding will decrease significantly in FY2022. This is because several significant sources of federal funding have been legislated to be provided until the first quarter of FY2022.²²⁷ The FOMB assumes that the shortfall of federal funding will be covered by increased general funding from the Commonwealth’s budget.

²²⁷ 2021 Fiscal Plan, FOMB, April 23, 2021, page 49.

Federal funding for Medicaid in Puerto Rico

- A11.7 The amount of Medicaid’s federal funding is usually determined using the Federal Medical Assistance Percentage (“**FMAP**”).²²⁸ FMAP defines the share of federal funding in the total funding of Medicaid for a given state,²²⁹ and is subject to a statutory minimum of 50% and a maximum of 83%.²³⁰ A state’s FMAP is a function of its income per capita. A state with comparatively low income per capita will have a higher FMAP (and therefore have a higher share of federal funding) than a state with a relatively high income per capita. In FY2019, Mississippi had the highest FMAP (76.4%) out of all states.²³¹
- A11.8 It is estimated that Puerto Rico’s FMAP would be 83%²³² (i.e., the maximum possible FMAP) if calculated the same way as for U.S. states (i.e., by considering Puerto Rico’s relatively low income per capita).²³³ However, Puerto Rico can draw down federal funds only up to the annual cap defined by Section 1108(g) of the Social Security Act (the “**Section 1108 cap**”). Puerto Rico’s Section 1108 cap was originally set in 1968, and increases annually by the medical component of the Consumer Price Index for Urban Consumers.²³⁴ This index had an average annual growth rate of approximately 6% between 1968 and 2020.²³⁵

²²⁸ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 3 [\[link\]](#).

²²⁹ Medicaid Financing - An Overview of the Federal Medicaid Matching Rate (FMAP), KFF [\[link\]](#).
For example, if FMAP is equal to 50%, federal funding will cover \$50 of total Medicaid expenses of \$100.

²³⁰ Federal Medical Assistance Percentages and Enhanced Federal Medical Assistance Percentages by State, MACPAC [\[link\]](#).

²³¹ Federal Medical Assistance Percentages and Enhanced Federal Medical Assistance Percentages by State, MACPAC [\[link\]](#).

²³² Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 82 [\[link\]](#).

²³³ I note that, according to the U.S. Census Bureau website, the median annual income in Puerto Rico in 2018 was \$16,953 in nominal terms. For comparison, the equivalent statistic for Mississippi is \$29,970. The median income in Puerto Rico in 2018 was therefore approximately 43% lower than for Mississippi, which had the highest FMAP of all states in FY2019.

²³⁴ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 82 [\[link\]](#).
See Figure A11-2 below for the increase in the Section 1108 cap between FY2011 and FY2020.

²³⁵ Consumer Price Index for All Urban Consumers: Medical Care Services, FRED website, accessed August 3, 2021 [\[link\]](#).

- A11.9 The Section 1108 cap limits Puerto Rico's federal funding to a statutory FMAP of 55%, meaning that federal funding can account for a maximum share of 55% of total funding.²³⁶ In fact, Puerto Rico's effective FMAP has historically been even lower than 55% (sometimes falling below 20%), with Puerto Rico's Medicaid spending exceeding the annual Section 1108 cap.²³⁷ For example, the Section 1108 cap in FY2019 was approximately \$367 million while total Medicaid funding in FY2019 was equal to approximately \$2,609 million, resulting in a FMAP of 14% prior to other federal funds.²³⁸
- A11.10 By relying only on capped federal funds, Puerto Rico would have experienced Medicaid funding deficits. To correct for this, the federal government has historically allocated additional time-limited federal funds to Puerto Rico. In particular:²³⁹
- (1) Section 2005 of the Affordable Care Act ("ACA") provided up to **\$5.4 billion** in additional Medicaid funding for Puerto Rico between July 2011 and September 2019;
 - (2) Section 1323 of the ACA provided a further **\$0.9 billion** in Medicaid funding for use between January 2014 and December 2019;
 - (3) the Consolidated Appropriations Act of 2017 provided **\$0.3 billion** in further federal Medicaid funding for use until 30 September 2019, after the Commonwealth exhausted the ACA funding quicker than expected; and
 - (4) the Bipartisan Budget Act ("BBA") of 2018 increased federal Medicaid funding by another **\$4.8 billion** for use between 1 January 2018 and 30 September 2019 in response to Hurricane Maria.
- A11.11 Puerto Rico's Section 1108 cap has been temporarily increased significantly through two recent acts:²⁴⁰
- (1) the FY2020 appropriations package, dated December 2019; and
 - (2) the Families First Coronavirus Response Act, dated March 2020.

²³⁶ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 75 [\[link\]](#).

²³⁷ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, pages 82 and 87 [\[link\]](#).

²³⁸ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 5 [\[link\]](#).

$\$367 \div \$2609 = 14.1\%$.

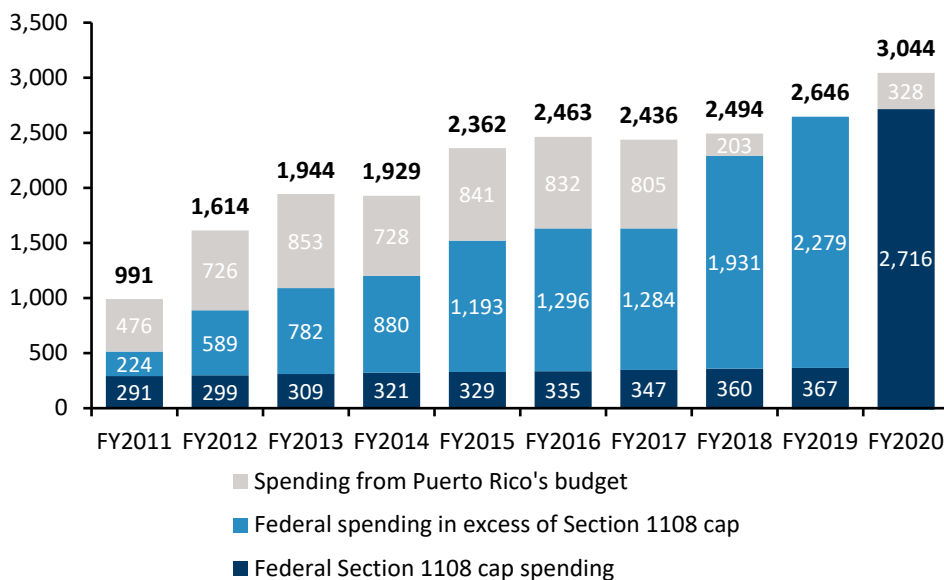
²³⁹ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, pages 82 and 83 [\[link\]](#).

²⁴⁰ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 3 [\[link\]](#).

A11.12 These two acts have temporarily increased Puerto Rico's FY2020 Section 1108 cap from \$375.1 million to \$2.7 billion, and the FY2021 cap from \$383.7 million to \$2.8 billion.²⁴¹ In addition, these acts also raised, on a temporary basis, Puerto Rico's FMAP from 55.0% to 76.0%.²⁴²

A11.13 Figure A11-2 below summarizes the sources of Medicaid funding in Puerto Rico between FY2011 and FY2020.

Figure A11-2: Medicaid spending in Puerto Rico by source of funds, FY2011 to FY2020 (\$ millions)



Note: Total and federal spending for FY2018 to FY2020 differs from Figure A11-1, presumably because different sources and definitions are being used.

Source: Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 5 [\[link\]](#). See Appendix 13 for additional details.

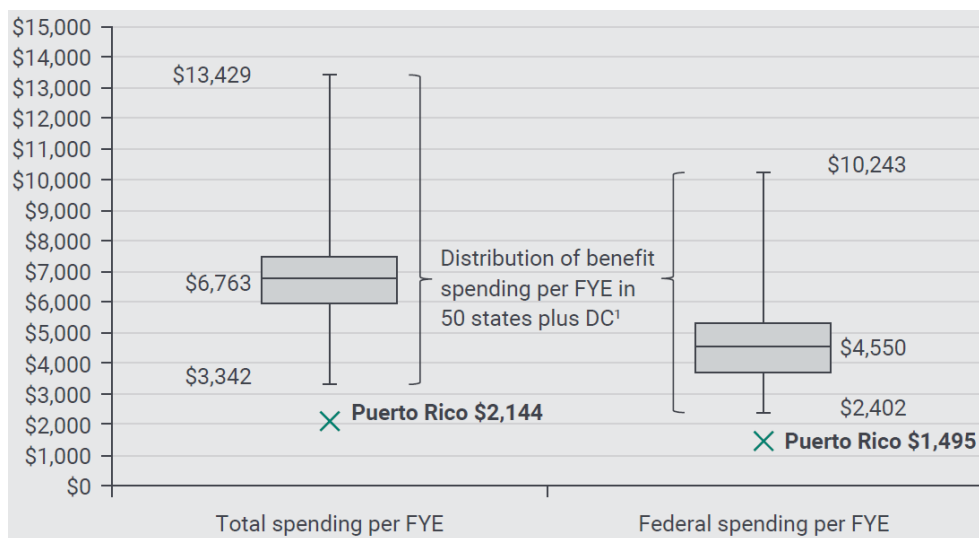
²⁴¹ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 3 [\[link\]](#).

²⁴² 2020 Fiscal Plan, FOMB, May 27, 2020, page 207.

Medicaid funding in Puerto Rico compared to U.S. states

A11.14 Figure A11-3 shows that Puerto Rico’s Medicaid expenditure per enrollee is significantly lower than in U.S. states.

Figure A11-3: Projected Medicaid benefit spending per FYE in Puerto Rico compared to the distribution of projected Medicaid benefit spending per FYE in 50 U.S. states and DC, FY2020



Note: “FYE” stands for ‘Full Year Enrollee’.

Source: Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019 [\[link\]](#).

A11.15 Figure A11-3 must be treated with caution, as it relies on Medicaid benefit expenditure data which has been rolled forward from 2013.²⁴³ Nevertheless, I understand these results to be broadly reliable, as the Medicaid and CHIP Payment and Access Commission (“MACPAC”)²⁴⁴ included these projections in their mandated report about Medicaid in Puerto Rico to Congress in 2019.

²⁴³ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 85 (notes to Figure 5-1) [\[link\]](#).

²⁴⁴ According to MACPAC’s website, MACPAC is a “non-partisan legislative branch agency that provides policy and data analysis and makes recommendations to Congress, the Secretary of the U.S. Department of Health and Human Services, and the states on a wide array of issues affecting Medicaid and the State Children’s Health Insurance Program (CHIP)” [\[link\]](#).

Medicare

- A11.16 Medicare provides coverage for people aged 65 and over regardless of income, medical history, or health status and additionally to people under age 65 with long-term disabilities.²⁴⁵
- A11.17 Medicare is split into four coverage plans:²⁴⁶
- (1) **Hospital insurance (Part A):** provides coverage for hospital stays and inpatient care. This plan requires no premiums from participants who have contributed to Medicare taxes for 10 years or more;
 - (2) **Medical insurance (Part B):** provides coverage for outpatient care and doctor visits. This plan requires a premium in San Juan of \$148.50 per month from participants.²⁴⁷
 - (4) **Medicare Advantage (“MA”) Plan (Part C):** bundles parts A, B, and D and offers some additional benefits such as dental coverage. This plan’s monthly premium in San Juan is between \$148.50 and \$247.50;²⁴⁸ and
 - (4) **Drug plan (Part D):** provides coverage for prescription medicines. This plan’s monthly premium in San Juan is between \$23.20 and \$69.70.²⁴⁹

Medicare funding in Puerto Rico

- A11.18 Unlike Medicaid, Medicare is a federal program that is fully funded by the federal government and is therefore not modelled in the FOMB’s Fiscal Plans.²⁵⁰ The U.S. federal government also receives the premia paid by Medicare participants.
- A11.19 As Medicare involves paying premiums for Parts B, D, and C, a territory’s total level of funding depends on the share of eligible people who decide to enroll and pay these premiums.

²⁴⁵ An Overview of Medicare, KFF, February 13, 2019 [\[link\]](#).

²⁴⁶ Medicare coverage in Puerto Rico, MCG website, accessed April 22, 2021 [\[link\]](#).

²⁴⁷ Overview of Medicare in San Juan (Parts A and B), Medicare website, accessed April 22, 2021.

²⁴⁸ Overview of Medicare in San Juan (Part C), Medicare website, accessed April 22, 2021.

²⁴⁹ Overview of Medicare in San Juan (Part D), Medicare website, accessed April 22, 2021.

²⁵⁰ How Is Medicare Funded - Medicare's Trust Funds, Premiums, and More, Healthline website, accessed April 22, 2021 [\[link\]](#).

A11.20 I did not find any contemporaneous and publicly available information about Medicare expenditure per enrollee in Puerto Rico. The most recent information I identified is a report produced by the Urban Institute dated January 2017, which states the following:²⁵¹

“Puerto Rico's per capita Medicare spending is \$5,230, significantly less than the national average of \$9,501.”

²⁵¹ Environmental Scan of Puerto Rico's Health Care Infrastructure, Urban Institute, January 2017, page 13 [\[link\]](#). I assume that this data relates to 2016 as the report is dated January 2017.

Appendix 12

Healthcare provision in Puerto Rico

Introduction

A12.1 This appendix sets out details about Puerto Rico's healthcare system:

- **Section 1** summarizes Puerto Rican healthcare provision from Medicaid, Medicare, and private/commercial insurance.
- **Section 2** examines the quality of healthcare in Puerto Rico by assessing the quality of Puerto Rican hospitals and the supply of healthcare staff.
- **Section 3** examines healthcare outcomes of Puerto Ricans through survey results.

Section 1: Healthcare provision

A12.2 Table A12-1 below sets out key details of the three main forms of healthcare provision in Puerto Rico.

Table A12-1: Summary of healthcare provision in Puerto Rico

Insurance type:	Medicaid	Medicare (incl. MA and Platino)	Private / Commercial
Source of funding	Commonwealth / Federal	Federal	Private
Population covered	Puerto Ricans with incomes lower than 133% of the Commonwealth Poverty Line ("CPL"). ²⁵²	(1) Puerto Ricans aged 65 years or older; and (2) Puerto Ricans with disabilities. ²⁵³	(1) Self-insured individuals; and (2) individuals insured by corporations.
Enrollment (# and % of total pop. in 2019) ²⁵⁴	1.46 million (45.6%) ²⁵⁵	0.45 million (14.1%) ²⁵⁶	1.00 million (31.3%) ²⁵⁷
Insurance market	Individual selects managed care organisation ("MCO") based on coverage and network. ²⁵⁸	Individual selects insurer based on coverage and network.	Individuals and employers select insurers based on coverage, network, and price.

²⁵² Puerto Rico: Medicaid, Fiscal Issues and the Zika Challenge, KFF, September 27, 2016 [\[link\]](#).

²⁵³ Types of Medicare Coverage Available in Puerto Rico, Medicare Consumer Guide, accessed March 31, 2021 [\[link\]](#).

²⁵⁴ Health Insurance Coverage of the Total Population, Kaiser Family Foundation, accessed July 27, 2021 [\[link\]](#); and QuickFacts: Puerto Rico, U.S. Census Bureau, accessed August 9, 2021 [\[link\]](#).

²⁵⁵ $1,456,000 / 3,193,694 = 45.6\%$.

²⁵⁶ $446,000 / 3,193,694 = 14.0\%$.

²⁵⁷ $(750,000 + 250,000) / 3,193,694 = 31.3\%$. This figure excludes Puerto Ricans covered under military programs.

²⁵⁸ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, pages 2 and 3 [\[link\]](#).

Other comments	See Appendix 11 for further details.	(1) The U.S. Federal Government funds 100% of the Puerto Rican MA cost. ²⁵⁹ (2) The U.S. Federal Government funds 99% of the Puerto Rican Platino cost, with the remaining 1% being funded by the Commonwealth (which pays a “wraparound premium” of \$10 per beneficiary per month). ²⁶⁰	N/A
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Source: see footnotes.

²⁵⁹ See Appendix 11 for further details.

²⁶⁰ Puerto Rico Government Health Plan financial projections, Pantely & Carlo, ASES, Milliman, September 9, 2019, page 5 [\[link\]](#).

Medicaid

Eligibility

- A12.3 To be eligible for Medicaid in Puerto Rico, a person's income must fall below 133% of the CPL.²⁶¹ As of 2016, the CPL for a single-person household was \$6,600. This is much lower than the equivalent Federal Poverty Level ("FPL") of \$11,880 in 2016.²⁶² This means that in Puerto Rico, a single-person household's income needs to be below \$8,778 to qualify for Medicaid.²⁶³ In comparison, in U.S. states, a person's income must fall below 138% of the FPL to qualify for Medicaid. This implies that a single-person household's income must be below \$16,394 to qualify.²⁶⁴

Benefits

- A12.4 Due to lack of funding, Puerto Rico currently only provides 10 of Medicaid's 17 mandatory benefits. For example, Medicaid in Puerto Rico does not cover:²⁶⁵
- (1) nursing facility services;
 - (2) non-emergency medical transportation; or
 - (3) emergency medical services for non-citizens, among other benefits.

Enrollment

- A12.5 In 2017, 47% of Puerto Rico's population was covered by Medicaid. This amount comprised of:²⁶⁶
- (1) 1.3 million Medicaid enrollees (of which 250,000 were also eligible for Medicare);
 - (2) 88,000 CHIP enrollees; and
 - (3) 145,000 additional Medicaid enrollees funded solely by the Commonwealth.

²⁶¹ The CPL is also known as the Puerto Rico Poverty Level ("PRPL"). Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 1 [\[link\]](#).

²⁶² Environmental Scan of Puerto Rico's Health Care Infrastructure, Perreira, Lallemand, Napoles & Zuckerman, Urban Institute, January 2017, page 10 [\[link\]](#).

²⁶³ $\$6,600 \times 133\% = \$8,778$.

²⁶⁴ $\$11,880 \times 138\% = \$16,394$.

²⁶⁵ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 81 [\[link\]](#).

²⁶⁶ Mandated Report – Medicaid in Puerto Rico, MACPAC, June 2019, page 78 [\[link\]](#). See also, Medicaid Financing Cliff: Implications for the Health Care Systems in Puerto Rico and USVI, Rudowitz, Hall & Lyons, Kaiser Family Foundation, May 21, 2019 [\[link\]](#).

A12.6 This rate is significantly higher than the equivalent rate for U.S. states of 19.7% as measured in October 2019.²⁶⁷

Medicare

Eligibility

A12.7 Medicare is available to:²⁶⁸

- (1) people aged 65 years and over; and
- (2) people who receive disability social security benefits.

Benefits

A12.8 Medicare helps to pay for several medical care services, such as:²⁶⁹

- (1) hospitalizations;
- (2) physician visits;
- (3) prescription drugs;
- (4) preventive services;
- (5) skilled nursing facilities and home healthcare; and
- (6) hospice care.

Structure

A12.9 Medicare is structured in four main parts – Parts A through D:²⁷⁰

- Medicare Part A (hospital insurance) and Medicare Part B (medical insurance) together make up "Original Medicare".
- Medicare Part C is known as Medicare Advantage. This is an alternative way to receive Original Medicare coverage. Most MA programs also include prescription drug coverage (see below). Enrollees in Medicare Part C are still enrolled in Parts A and B.
- Medicare Part D provides prescription drug coverage.

²⁶⁷ 64.7 million / 330.2 million = 19.6%. Medicaid Facts and Figures, CMS, January 30, 2020 [\[link\]](#); and Happy New Year to 330,222,422 People in the United States, U.S. Census, December 31, 2019 [\[link\]](#).

²⁶⁸ Types of Medicare Coverage Available in Puerto Rico, Medicare Consumer Guide, accessed March 31, 2021, pages 1 and 2 [\[link\]](#).

²⁶⁹ An Overview of Medicare, Kaiser Family Foundation, February 13, 2019, page 1 [\[link\]](#).

²⁷⁰ Understanding Medicare and its Various Parts, Medicare Consumer Guide, accessed March 16, 2021 [\[link\]](#).

A12.10 Each of these four Medicare parts has various premiums paid by the end user of the healthcare services, with the remainder being funded by the U.S. Federal Government:

- (A) usually free;²⁷¹
- (B) \$148.50, with individuals earning more than \$88,000 per annum paying additional charges;²⁷²
- (C) from \$0.00 to \$99.00, which is paid in addition to the \$148.50 Part B premium;²⁷³ and
- (D) from \$20.20 to \$61.80.

MA / Medicare Platino

A12.11 Nearly all Puerto Ricans who are fully eligible for both Medicare and Medicaid benefits choose to enroll in Medicare Platino. Medicare Platino is an MA (Plan C) plan, which also covers the original Medicare plans (Plans A and B) and prescription drugs (Plan D).²⁷⁴

A12.12 Premiums for the Medicare Platino plan are covered directly by the Commonwealth, who are then subsequently reimbursed by the Federal Government, with the cost of the prescriptions covered by the Enhanced Allotment Program (“EAP”). The EAP is a federally funded program which offers healthcare subsidies to low-income Medicare beneficiaries.²⁷⁵

Enrollment

A12.13 The Centers for Medicare and Medicaid Services (“CMS”) publish data on Medicare enrollment by month. This data shows that in June 2021, 615,624 Puerto Ricans were enrolled in MA out of a total of 754,565 Puerto Ricans enrolled in Medicare (81.6%).²⁷⁶ The percentage of Medicare enrollees in MA is significantly higher than the U.S. average of 43.3%.²⁷⁷

²⁷¹ Part A costs, Medicare.gov, accessed August 11, 2021 [\[link\]](#).

²⁷² Part B costs, Medicare.gov, accessed August 11, 2021 [\[link\]](#).

²⁷³ Your Medicare coverage options, Medicare.gov, accessed August 11, 2021 [\[link\]](#).

²⁷⁴ Medicare Advantage enrollment soared in Puerto Rico. Now it’s starving the island’s healthcare system, Richman, Fierce Healthcare, August 8, 2018 [\[link\]](#).

²⁷⁵ Medicaid and CHIP in Puerto Rico, MACPAC, February 2021, page 2 [\[link\]](#).

²⁷⁶ Medicare Enrollment Dashboard Data File, CMS, accessed August 9, 2021: “Monthly Enrollment Counts” tab, row 39940 [\[link\]](#).

²⁷⁷ $27,460,155 / 63,481,016 = 43.3\%$. Medicare Enrollment Dashboard Data File, CMS, accessed August 9, 2021: “Monthly Enrollment Counts” tab, row 36692 [\[link\]](#).

Private / commercial

- A12.14 In 2019, approximately one million Puerto Ricans (or 31.3% of the population) accessed healthcare through either private or commercial insurance.²⁷⁸

Section 2: Healthcare quality

- A12.15 When interviewed, 25 key stakeholders²⁷⁹ of Puerto Rico's healthcare system cited a lack of data on healthcare quality as a primary concern.²⁸⁰ Given this, it is difficult to accurately assess the quality of Puerto Rico's healthcare system.
- A12.16 Despite this, evidence suggests that the quality of care in Puerto Rico is worse than in U.S. states. For example, a study published in April 2016 found that, for 15 of the 17 measures assessed, Hispanic MA enrollees in Puerto Rico received worse care compared with Hispanics in the U.S.²⁸¹

Hospitals

- A12.17 Although Puerto Rico's declining population means that Puerto Rico does not necessarily need new hospital investment, Puerto Rico's existing hospital system is underfunded and of low quality. For example:²⁸²
- many hospitals in Puerto Rico lack back-up generators;
 - some hospitals have not been modernized since they were built in the 1940s;
 - some hospitals lack basic equipment, such as wheelchairs and gurneys; and
 - many hospitals do not offer essential healthcare services, such as MRI scans and infusions for cancer treatments.

²⁷⁸ Table A12-1.

²⁷⁹ Key stakeholders include representatives of: (i) the Office of the Governor of Puerto Rico; (ii) managed care organisations; (iii) the Puerto Rico Health Insurance Administration; (iv) healthcare providers; and (v) medical educators and researchers (source: Puerto Rico Health Care Infrastructure Assessment, Perreira, Peters, Lallemand & Zuckerman, Urban Institute, January 2017, page 1 [\[link\]](#)).

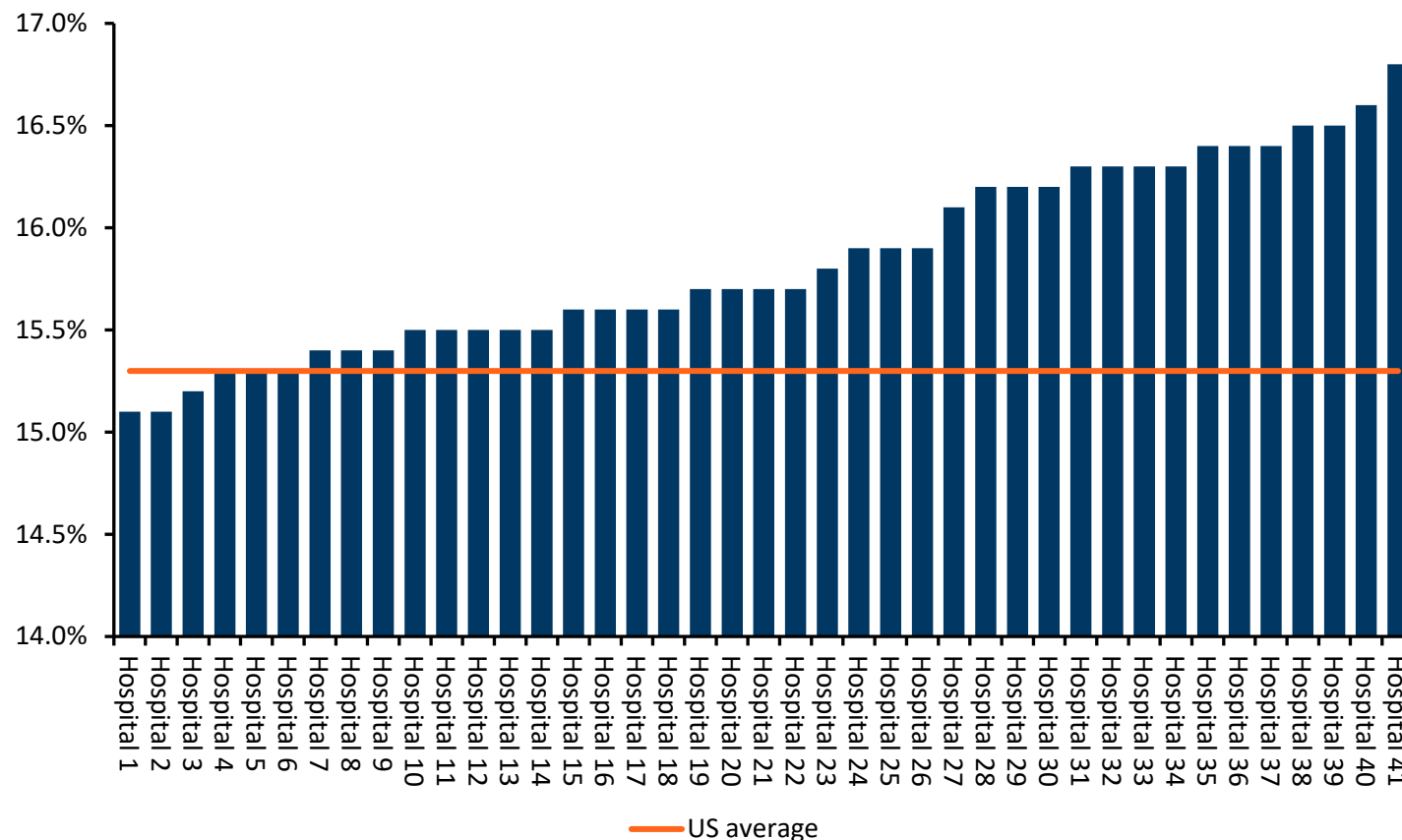
²⁸⁰ Puerto Rico Health Care Infrastructure Assessment, Perreira, Peters, Lallemand & Zuckerman, Urban Institute, January 2017, page 13 [\[link\]](#).

²⁸¹ Quality of Care for White and Hispanic Medicare Advantage Enrollees in the United States and Puerto Rico, Rivera-Hernandez, Leyva, Keohane & Trivedi, Journal of the American Medicine Association, April 25, 2016, page 787 [\[link\]](#). According to the study, 99% of Puerto Ricans self-identify as Hispanic.

²⁸² Puerto Rico Health Care Infrastructure Assessment, Perreira, Peters, Lallemand & Zuckerman, Urban Institute, January 2017, page 17 [\[link\]](#).

A12.18 The lower quality of Puerto Rico's hospitals is also evidenced by hospital readmission rates which are consistently higher than the average for U.S. states. The readmission rate measures the percentage of patients who had an unplanned readmission to the hospital within 30 days of discharge. Figure A12-1 shows that 35 out of 41 Puerto Rico hospitals have admission rates above the U.S. average.

Figure A12-1: Readmission rates in Puerto Rican hospitals compared to the U.S. average readmission rate, FY2015 to FY2017 (%)

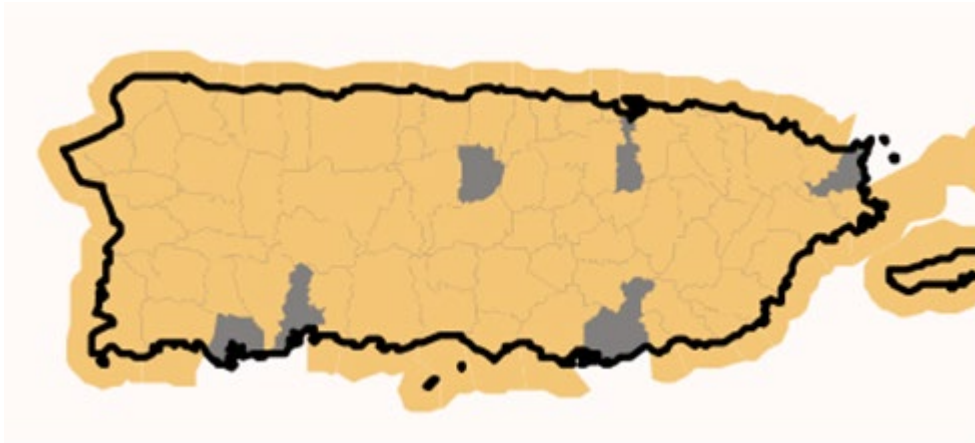


Source: *The disparity in hospital quality metrics between Puerto Rico and the U.S.*, Balaguer, Divi, Kierce & Bigio, V2A Consulting, December 2, 2019 [\[link\]](#). See Appendix 13 for additional details.

Staff

- A12.19 There are shortages of physicians in Puerto Rico. While Puerto Rico has an adequate supply of dentists, nurses, pharmacists, and physicians in aggregate, its healthcare professionals are unevenly distributed, with 72 of Puerto Rico's 78 municipalities being categorized as "*medically underserved*" by the U.S. Health Resources and Services Administration ("**HRSA**").²⁸³ This is shown graphically in Figure A12-2 below, with the medically underserved areas highlighted in yellow.

Figure A12-2: Medically underserved areas of Puerto Rico, as of April 7, 2021



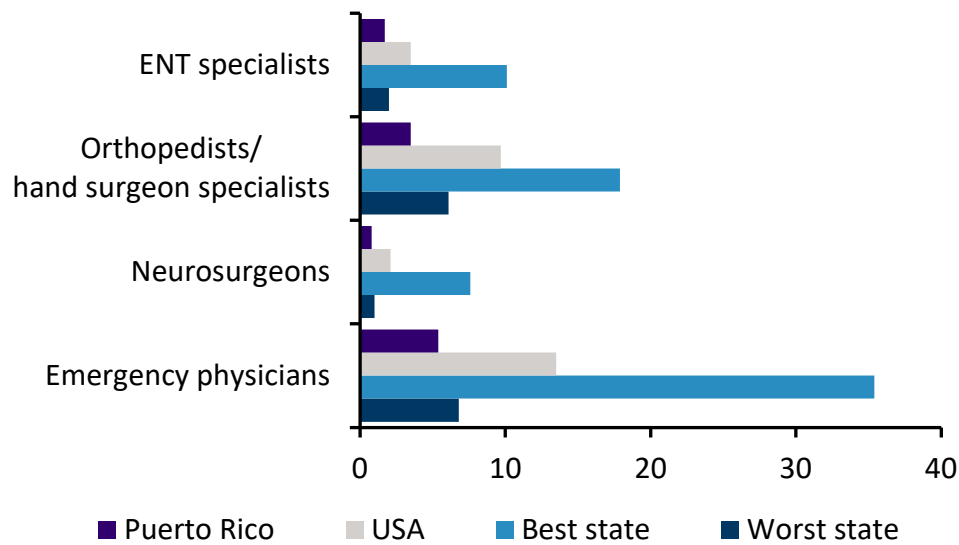
Note: Medically underserved areas are highlighted in yellow.

Source: Medically Underserved Areas/Populations, Health Resources & Services Administration, April 7, 2021.

- A12.20 Puerto Rico lacks specialist physicians. Puerto Rico's rates of certain physician types per 100,000 people are lower than those of the worst performing U.S. state. This is shown in Figure A12-3 below.

²⁸³ Puerto Rico Health Care Infrastructure Assessment, Perreira, Peters, Lallemand & Zuckerman, Urban Institute, January 2017, page 13 [\[link\]](#).

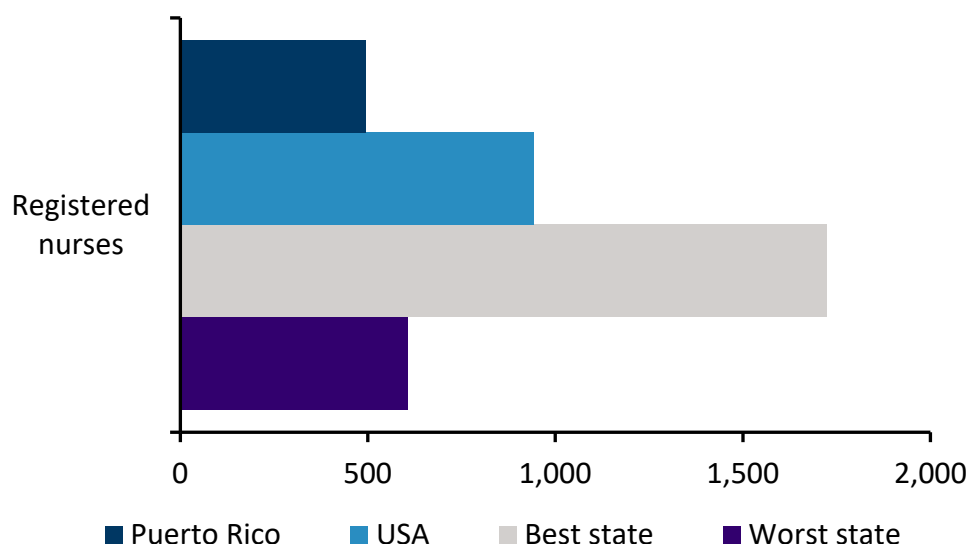
Figure A12-3: Comparison of special physicians per 100,000 people in Puerto Rico and U.S. states, 2014



Source: *The disparity in hospital quality metrics between Puerto Rico and the U.S.*, Balaguer, Divi, Kierce & Bigio, V2A Consulting, December 2, 2019 [\[link\]](#).

A12.21 Likewise, Puerto Rico also lacks nurses in comparison to U.S. states. Again, the rate of nurses per 100,000 people in Puerto Rico is significantly below that of the worst performing U.S. state. This can be seen in Figure A12-4 below.

Figure A12-4: Comparison of nurses per 100,000 people in Puerto Rico and U.S. states, 2014



Source: *The disparity in hospital quality metrics between Puerto Rico and the U.S.*, Balaguer, Divi, Kierce & Bigio, V2A Consulting, December 2, 2019 [\[link\]](#).

- A12.22 These shortages are in part caused by the active recruitment of specialist Puerto Rican physicians by hospital and physician groups in mainland USA. Puerto Rican physicians are demanded by mainland U.S. hospitals as they are often bilingual, and the Puerto Rican physicians are usually rewarded with significantly higher salaries and a better quality of life in mainland USA.²⁸⁴

²⁸⁴ Puerto Rico Health Care Infrastructure Assessment, Perreira, Peters, Lallemand & Zuckerman, Urban Institute, January 2017, page 19 [\[link\]](#).

Section 3: Healthcare outcomes

- A12.23 Due to Puerto Rico's lower healthcare quality, healthcare outcomes appear to be worse in Puerto Rico than in U.S. states. For example, self-reported health status survey results suggest that Puerto Ricans are twice as likely to report either fair or poor health than residents of U.S. states.²⁸⁵ The Puerto Rican survey respondents who reported either fair or poor health were more likely to be lower income²⁸⁶

Self-reported health

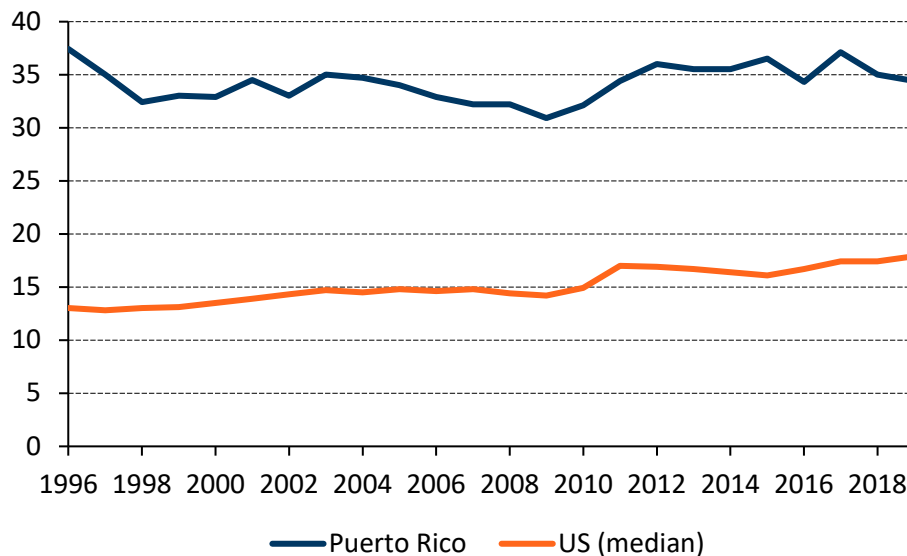
- A12.24 The Centers for Disease Control and Prevention ("CDC") run the Behavioral Risk Factor Surveillance System ("BRFSS"). The BRFSS conducts health-related telephone surveys on U.S. residents and publish their results on a state-by-state level.²⁸⁷
- A12.25 One of the health indicators that the BRFSS tests for is self-reported health. Survey participants can provide one of the following five answers:
- (1) excellent;
 - (2) very good;
 - (3) good;
 - (4) fair; or
 - (5) poor.
- A12.26 Since 1996, the percentage of respondents reporting either fair or poor health in Puerto Rico has been consistently higher than the U.S. average. This is displayed clearly in Figure A12-5 below.

²⁸⁵ Figure A12-5.

²⁸⁶ Figure A12-6.

²⁸⁷ Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention, accessed March 18, 2021 [\[link\]](#).

Figure A12-5: Percentage of BRFSS respondents reporting either fair or poor health, 1996 to 2019 (%)



Note: The U.S. constitutes all U.S. states plus the District of Columbia.

Source: BRFSS Prevalence & Trends Data, Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention, accessed July 28, 2021 [\[link\]](#).

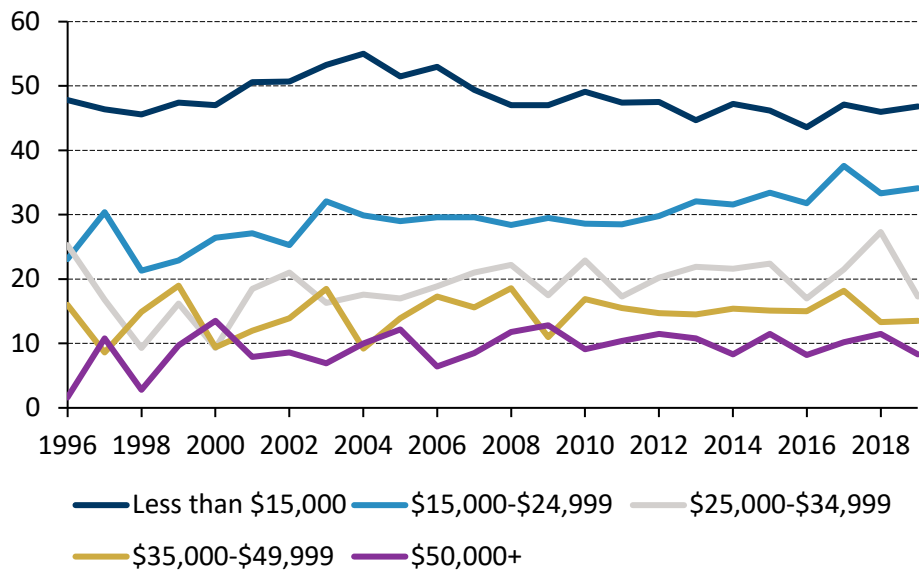
By income

A12.27 In addition to disaggregation by age, the BRFSS also breaks down its self-reported health status survey data by income bracket. The annual income brackets used by the BRFSS are:

- (1) less than \$15,000;
- (2) between \$15,000 and \$24,999;
- (3) between \$25,000 and \$34,999;
- (4) between \$35,000 and \$49,999; and
- (5) \$50,000 and over.

A12.28 This breakdown reveals that the lowest income Puerto Rican BRFSS respondents (who earn less than \$15,000 per annum) are far more likely to report either fair or poor health than wealthier respondents. This is demonstrated in the figure below.

Figure A12-6: Percentage of Puerto Rican BRFSS respondents reporting fair or poor health by income bracket, 1996 to 2019



Source: BRFSS Prevalence & Trends Data, Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention, accessed July 28, 2021 [\[link\]](#).

Appendix 13

Figures and tables

This appendix is provided in the form of an accompanying Microsoft Excel spreadsheet.